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The Value of Reclaimed Rubber *in* TREAD STOCK

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VOGT[1] has published work showing that reclaim hydrocarbon has a value, judged by laboratory abrasion resistance in tread stock, varying from zero when used in small quantities up to a maximum of 50 per cent of the value of new rubber when compounded in large percentages. This work was followed up by Gagnon,[2] who worked with stocks in a range between the base stock and Vogt's first reclaim compound, and he showed a high negative value for small amounts of reclaim. He also showed that the effects of adding reclaim depended on the base stock. If the abrasion of the base stock has already been lessened by diluents, the substitution of reclaim has relatively less effect than substitution of reclaim in a high grade stock.

In the work mentioned so far due allowance had been made for the mineral ingredients of the reclaim and all comparative compounds were on an equal ultimate composition basis. Gagnon in further work used a different method when he took a non-reclaim tread and a high reclaim tread and blended them in definite proportions to get intermediate stocks. He concluded that judged by abrasion resistance the value of the reclaim hydrocarbon is negative, becoming positive at about 40 per cent reclaim hydrocarbon and having a value of 50 per cent of new rubber in an all reclaim stock.

In none of this work was there any opportunity to check the compounds in service. The present work, therefore, was undertaken with this object particularly in mind. Advantage was also taken of the opportunity to compare physical properties, in addition to abrasion resistance, with service and thus make a study of the value of these properties in evaluating compounds for road wear.

Experimental Reclaim Used

The reclaim used was a typical high-grade whole-tire alkali-process reclaim. Its composition was as follows:

Acetone extract	8.84
Chloroform extract	22.00
Free sulphur	0.09
Total sulphur	2.54
Carbon black	10.00
Ash	21.11
Sp. Gr.	1.15

When cured with 5 per cent sulphur for 18 min. at 40 lbs. (141.5° C.), it gave a tensile of 55 kg. per sq. cm. and an elongation of 430 per cent. The hydrocarbon content of the reclaim was figured at 55 per cent.

Method of Compounding

In this work we took a high grade tread and an all reclaim stock and obtained three intermediate stocks by blending. The all reclaim stock was compounded to give maximum abrasion resistance consistent with ability to handle in the factory.

TABLE 1

	1	2	3	4	5
Rubber	100	75	50	25	0
Whole tire reclaim	0	45.5	91	136.50	182
Zinc oxide	6	4.5	3	1.50	0
Carbon black	43	39.55	36.10	32.65	29.20
Pine tar	6	4.5	3.0	1.5	0
Stearic acid	3	2.8	2.59	2.39	2.18
Sulphur	3	3.23	3.46	3.69	3.92
Captax	1	0.87	0.73	0.59	0.45
	162.2	175.95	189.88	203.82	217.75
Sp. Gr.	1.12	1.15	1.18	1.20	1.23

Since these are all on the basis of 100 rubber (figuring the reclaim 55 per cent reclaim hydrocarbon), the proportions are obvious. The carbon black is lowest in the all reclaim stock but if we figure in the black of the reclaim the loading goes up with the series.

There are two rather obvious criticisms of this series. The first is that more stocks might have been taken particularly between zero and 25 per cent reclaim hydrocarbon. The second is that in this method we have not allowed for the activating effect of the reclaim. The middle stocks particularly No. 2 and No. 3, are relatively faster curing. It was felt that it was better to do this and let the cure vary rather than adjust the accelerator. The physical tests were all done over a range of cure, and it was not considered necessary for the road test as other work had shown that road wear (at least within reasonable age limits) is not sensitive to cure variations.

The procedure followed was to put up a quantity of No. 1 and No. 5; then No. 2, No. 3, and No. 4 were made up of blends of these two in the proper proportions. The black was used as a 60-40 master batch with the rubber and as a 75-25 master batch with the reclaim. The latter was refined before using.

Road Tests

TAXICAB. The stocks were run as two-way treads on 30 by 5. The comparisons were No. 1 vs. No. 2, No. 2 vs. No. 3, No. 3 vs. No 4, No. 4 vs. No. 5, No. 1 vs. No. 3, and

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[1] *J. Ind. Eng. Chem.*, Vol. 20, p. 140, Feb., 1928.

[2] Unpublished work, The Goodyear Tire & Rubber Co.

No. 1 vs. No. 5. There were sixteen tires in each lot. The test was run on taxicabs in Philadelphia and covered a period from August 1 to November. The tires were applied to front or rear as needed, but the tests represent mostly rear mileage. The wear was obtained by button height and over all thickness measurements.

TEST CARS. The same comparisons with two tires in each set were made on 4.50/21 and run on a Dodge test car, rears only. The tires were rotated every 700 miles. The tires were measured when the faster wearing half showed approximately two-thirds of the button height loss. This test was run the last week in August.

Physical Tests

All physical tests were made on factory mixed stock. The sample was taken from the tubing machine at the time of running the treads for the test tires. Standard procedures for physical testing were used except as herein noted.

ABRASION. For convenience we have referred to Vogt's paper in designating the abrasion methods.

Method A—Regular Goodyear machine, 16° angle.

Method C—30 per cent slip.

Method D—20° angle.

Method E—Grasselli abrader.

WHEEL ABRASION. For this test a 30 by 5, one-way tread was run on a dynamometer with the wheel covered with sandpaper and under the following conditions: Load 750 lbs., inflation 30 lb./sq. in., speed 25 m.p.h., traction 375 lbs.

TEAR TESTS. This was not intended to be an exhaustive comparison of tear methods but several are included as this work did offer an opportunity to compare results on an evaluated series of stocks. There is no attempt to make out a case for any particular method. We do feel, however, that it is practically impossible to get values from any method which attempts to take into account the knots of carbon-black stock. The knotting is undoubtedly an important characteristic of the stock but the actual values obtained when they develop are meaningless.

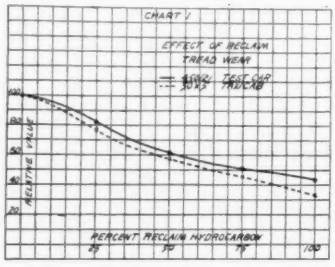
GRAIN TEAR. This method is an attempt to get a numerical value for the hand-tear test. The test piece, 2 mm. thick, is cut and torn in the test machine and values are read from those places where the stock tears with the grain and does not knot.

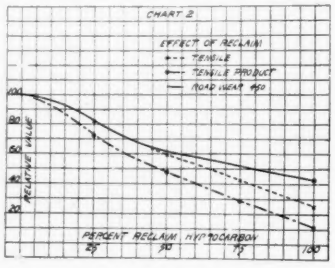
LAMINATION. The test piece, 4 mm. thick, is cut to tear with the laminations, i.e., in a plane parallel to the mold surface. The pull required to tear a specimen 1 cm. wide is recorded.

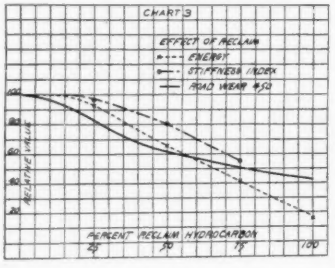
SHEAR. This test was made in a special apparatus in which a 2 mm. sheet is held and a plunger pushed through it. The apparatus is designed so that a minimum of flow and distortion takes place. The plunger cuts through the sheet with a shearing action and the force required is measured.

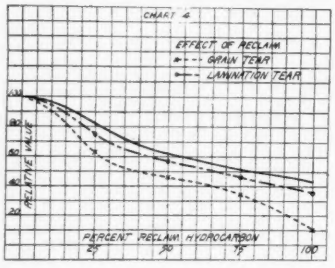
REBOUND OR MECHANICAL EFFICIENCY. This test is made by the pendulum method.

FATIGUE. A strip of rubber 1 cm. wide was suspended from an upper jaw, while from a lower jaw was hung a weight sufficient to cause an elongation of 250 per cent. The upper jaw moved through a three-inch stroke 350 times per minute and the test consisted of subjecting the specimen to this action for five minutes. The stress-strain curve of the stock was taken after the test and compared to a similar curve for an original specimen.









Results of Road Tests

The results of the road tests are shown as relative values on Chart 1. The test-car test gave exceptionally good checks from tire to tire and in the cross comparisons. The agreement between the test-car run and the taxicab test is closer than we anticipated.

Tensile Properties

The tensile properties at best cure are shown in Table 2.* The relative values for tensile and tensile products are shown on Chart 2. On each chart we have shown for comparison the test-car tread-wear curve. The tensile follows the road curve fairly well while the tensile product does not show so good a comparison.

Energy of resilience and stiffness index, both of which are used as criteria for the evaluation of tread stocks, are shown on Chart 3. Neither correspond to the road values so closely as does the tensile.

Tear

The relative values for tear are given on Chart 4. The lamination tear results give a fairly close indication of the road wear.

Abrasion

The abrasion-machine results on Chart 5 show that the best indication is given by C, the 30 per cent slip method, and by D, 20° angle method. The Goodyear machine, A, and the Grasselli abrader are quite close together.

Mechanical efficiency, hardness, and shear are shown on Chart 6. The mechanical efficiency stays up better than any other mechanical property. It is practically constant from 25 per cent reclaim hydrocarbon on as is likewise the hardness. The shear coincides with road value down to 50 per cent and then falls off more rapidly.

Fatigue

The conditions chosen for this test were so severe that only the No. 1 and No. 2 stocks stood the test without breaking. Curves are shown for the best cures on Chart 7. It

TABLE 2

Stock No.	Time of Best Cure at 258° C.	Tens.	Elong.	Load at 300%	Load at 500%	Tens. Prod.	S. I.*	Energy Kg.cm./cm.³
1	70	300	690	62	166	207	104	670
2	50	250	590	94	194	147	100	612
3	50	184	550	82	166	100	84	440
4	60	122	490	68	(124)	60	56	257
5	60	76	380	56	...	29	..	111

*S. I. = Stiffness Index = Difference in load between 500% and 300%.

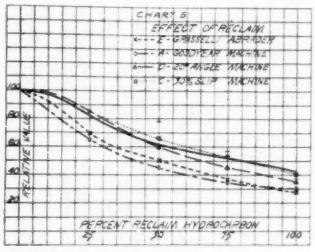
will be noted that the apparent stiffness of the No. 2 disappears on this test. The energy at 250 per cent elongation may or may not be significant but the following figures are of interest.

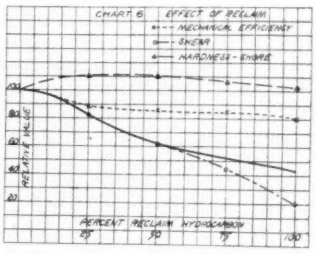
	Stock No. 1 Kg. cm/cm³	Stock No. 2 Kg. cm/cm³
Energy before fatigue	44	68
Energy after fatigue	13	13.2

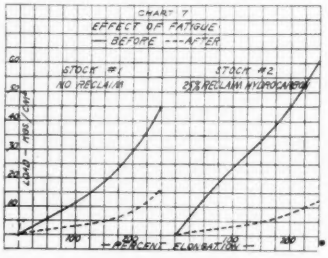
Discussion of Results

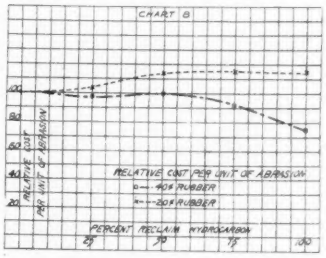
In interpreting these results, we must keep in mind that they are based on one type of compounding variation. Because a certain property follows the road curve quite closely, it does not follow that this property would give the same indication of service on another type of compounding. Sweeping generalizations cannot be drawn and we emphasize this point in order that unjustified conclusions may not be drawn. In looking over the charts we see that tensile and lamination tear are the two most indicative tests.

Of the abrasion tests the 30 per cent slip and the 20° angle methods seem best. The Grasselli and the Goodyear machines do, however, give results parallel after the 25 per cent point so that comparison between two stocks in this range would give relative values corresponding to the road.









The shear test follows exactly down to 50 per cent reclaim hydrocarbon and then falls below the road abrasion curve. By referring back to Chart 2 it will be seen that the shear is very close to the tensile. That seems to be the general indication with this test. This may either mean that shear and tensile really go together or it may be that this only follows because of the way in which we conduct the test. At any rate this is of interest in connection with the speculations on the role of cutting and tearing on abrasion.

Unfortunately our fatigue test as applied was of little use. It does show, however, that the stress-strain properties change very decidedly after the rubber is subjected to working action. From the fact that stock No. 1 will stand the action of the test for days, while stocks Nos. 3, 4, and 5 will stand it only a few seconds, we see that we have here one property on which the reclaim has a very marked effect. The relatively good showing of the reclaim stocks on the mechanical efficiency test is subject to a good deal of question in view of the fatigue test.

We find very little in these results to encourage efforts to evolve evaluation formulae. In the first place tensile and tear by themselves seem to be closely indicative and in the second place the fatigue test gives us reason to believe that the properties of the unstressed stock are of fictitious value. Coming down to the question of evaluating the reclaim hydrocarbon, we see from the road abrasion curve that it has a positive value at all points.

Using the method as given by Vogt where

A=value of abrasion resistance of new rubber hydrocarbon, and let it be assigned a value of 100 units.

B=value of reclaim hydrocarbon in the same units.

C=experimentally determined values for abrasion resistance.

Y=amount of new rubber hydrocarbon as a decimal fraction and 1.00—Y—amount of reclaim hydrocarbon as a decimal fraction.

Then $AY+B(1.00-Y)=C$ on the assumption that the qualities of the two types of hydrocarbons are additive. Solving

$$B = \frac{C-AY}{1.00-Y}$$

Using this on the road values we have:

TABLE 3
Value of Reclaim Hydrocarbon

New Rubber Hydrocarbon Per Cent	Reclaim Hydrocarbon Per Cent	B Values from Road Test
100	0	..
75	25	32
50	50	25
25	75	34
0	100	42

B is not worked out for the laboratory determined properties because the relation is perfectly clear from the charts.

The real evaluation of the reclaim should be on a cost basis. We have done this in the following table* and have shown the relative cost per unit of abrasion on Chart 8.

In order to show the wear on an equivalent cost basis we have shown the relative cost per unit of abrasion. Taking No. 1 stock as the standard, we have obtained the cost of an amount of stock to give the same wear and then shown this as a relative figure in the column headed "Unit Abr. (Rel)." The cost per unit of abrasion is obtained by dividing the volume cost by the relative abrasion value.

On this basis at 20-cent rubber the reclaim is uneconomic at all points. It rises to a relative value of 115 at 50 per cent and then stays constant. At 40-cent rubber the relative value stays about constant until 50 per cent when it drops and at all reclaim it gives about 25 per cent more for the money. In the above consideration we have neglected that fact that abrasion value is not the only factor to be considered. In many cases a certain volume or body is required and the use of reclaim compounds is justified.

Summary

The road abrasion value has been determined on a series of tread stocks containing from 0 to 100 per cent reclaim hydrocarbon. There is a close check between the road value as determined on two different types of road tests. The value of reclaim in this test is shown to vary from 25 to 42 per cent of the value of new rubber, being higher for the all reclaim stock. The relative cost per unit of abra-

*

TABLE 4
Cost per Unit of Abrasion

Compound No.	Per Cent Reclaim	Road Value	Sp. Gr.	20-Cent Rubber 7-Cent Reclaim Lb. Cost	Vol. Cost	Unit Abr. (Rel)	40-Cent Rubber 8-Cent Reclaim Lb. Cost	Vol. Cost	Unit Abr. (Rel)
1	0	100	1.12	.1497	.1677	(100)	.2757	.31	...
2	25	82.5	1.148	.1241	.1425	(104)	.2159	.25	(98)
3	50	62	1.175	.1022	.120	(115)	.1651	.193	(100)
4	75	51	1.20	.0835	.100	(117)	.1213	.145	(92)
5	100	43.5	1.23	.0671	.084	(115)	.0832	.102	(76)

sion is shown to be above rubber at all points for 20-cent rubber. For 40-cent rubber it is lower than rubber when used above 50 per cent reclaim hydrocarbon. The relative values for laboratory tests are compared to the road value. The tensible, lamination tear, and the 30 per cent slip abrasion seem to give the best indication of road value.

Acknowledgment

The writer wishes to express his appreciation to W. W. Vogt for valuable suggestions and criticism and to George Albertoni who performed most of the physical tests and who developed the shear and fatigue tests that are recorded in this paper.

Chain-Store Selling Policy

Applicable to the Rubber Industry

INDUSTRIAL amalgamations, chain stores, and buying syndicates are forcing the manufacturers of rubber goods to realize that they are facing a keener, higher specialized, and larger market than ever before. The chain store of today is in some instances in the market for one-third to one-half of the production of the country on certain lines. They are of such a size that no one manufacturer could supply them with all the merchandise they would use. They attract the keenest buyers, who keep posted not only with the price of crude materials but who subscribe to the trade journals and are familiar with improvements in products as well as new articles. They have facilities for analyzing quality and realize that a few ounces of difference in weight of similar products, with rubber at twenty cents a pound, is not going to make a material difference in the cost. Neither is the difference in color.

Rubber Is Bought on Confidence

What they do want is an article that has talking points, and one which will enable the clerk to show the customer that the more expensive product has merit over the competitive article, for their profit as well as the manufacturer's is made on the higher grade merchandise, and yet it must be something that their competitor cannot cut the price of.

No longer can the manufacturer hide behind the worn-out phrases "heavier," "finer," and "larger" for his profitable product. He must obtain the confidence of his customer, because rubber, more than any other product, is bought on confidence and this confidence is created by a strong, well-defined selling policy with enough assurance to convince the customer that it is going to be maintained, giving the dealer, who stocks and uses his efforts to sell a product, a greater degree of protection than the man who has his office in his hat. He must show that he has control of his own product, especially the profitable numbers, and last but not least he must be in a position to give prompt service, for service means turnover and turnover means profits. An analysis by the Department of Commerce shows that chain grocery stores turn over their stock twenty times annually. Make your own comparison.

Advantages of "Chains" Overestimated

No less an authority than Louis K. Liggett states, "In quantity buying, the chain stores have an advantage which is generally overestimated."

It is obvious that manufacturers can sell their products to chain stores at less selling expense, but not at a material saving. It is up to the individual manufacturer to look the situation straight in the face and consider the saving in selling; the advertising value of display of his merchandise in the chain store; also whether the chain store will agree to exhibit his stock conspicuously and whether it will push his products and more especially push the goods that show better profits, or whether it will take the easiest way and sell largely the competition product; and how it would affect his business to lose the account and with what the account could be replaced.

The hard rubber industry has been seriously affected during the past few years by radical changes in radio equipment and the entrance of phenolic condensation products into the field of competition. One manufacturer has been successful in keeping his plant running to capacity for the last two years with a handsome profit due, as he describes it, to owner management and patent protection. He not only contracts for the exclusive use of new patents but endeavors to obtain protection on each new article that he makes as well as the processes of manufacture.

A maker of water bottles acquired a trifling patent protection on a product and by clever, extensive salesmanship and a small advertising back-up found himself in a position to sell his complete line of merchandise because of the demand for the improved water bottle.

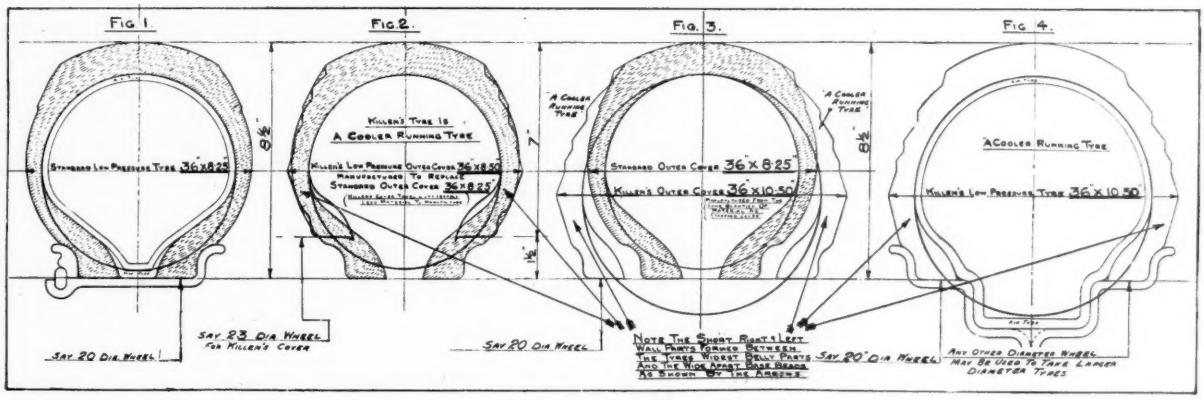
A dealer who for several years back had been dividing his business on a small rubber article among three different manufacturers, suddenly was confronted with the fact that one of the three had acquired a patent on a slight improvement to his article, and this gave just enough advantage to that manufacturer to enable him to get all the business. One of these days the other two will wake up and say, "Why didn't we think of that?"

Chain Stores Seek Control

One manufacturer, who makes several patented money-making rubber articles, had been approached by a chain-store outfit with a view toward buying the entire plant, and several owners of patented rubber articles have been approached also, thus showing that the chain store realizes the importance and the possibility of controlling the money makers of the rubber industry through the acquisition of patents.

And yet how many of your patented articles are being used to open an order-book for your salesmen. They are valueless unless your line is built around them.

The War showed us all that our lines were too large. Now there is a chance to make our jobbing line smaller and have a line for chain stores. Too many times the cheap package looks as good as the better grade number. How many times have we cheered when we landed a good account and a few years later cheered when we lost it simply because we did not lay our plans or give the dealer ammunition to complete the sale to his customer. All the inducements that we may offer the dealer to load up with stock amount to nothing if we don't give him a balanced line, giving him selling arguments showing real advantages to the customer in spending more money for a better article.



Killen Tire Claims Novel Casing and Rim Features

New British Model Said to Increase Width and Strength of Round Pneumatics and Give More Air Volume, Without Added Cost or Material

THE possibility of making a 5-inch tire (or rather the same area and weight of material used therein) do all the work of a 6-inch tire, while costing no more—one of the chief advantages claimed for the new British Killen tire and rim fitment—has lately aroused considerable interest among tire makers and users here and abroad. Its inventor and his supporters claim that the new tire is revolutionary in design, being the first ever made round in cross-section while having the center-line height less than the width and the sidewalls between the widest part of the belly and the beads substantially shortened. An important merit claimed for it, too, is that the tire can be fitted to a standard straight side rim as well as to the Killen deep-well (drop-center) rim.

Ordinarily, it is pointed out, if low-pressure tires are to be used to carry a certain load, the tires must be wider. Increased width being thus essential, an obvious advantage would be gained in having tires wider and stronger at no greater cost, which also conform to the established principles in design and construction. The Killen claim is that the new and wider tires can also be fitted to standard chassis without changing either the effective gear ratio of the chassis or reducing the diameter of the wheels. Thus, a nominal 6-inch giant pneumatic tire may be fitted in the place of a nominal 5-inch one, an 8-inch may replace a 7-inch, a 10-inch an 8-inch, and an actual 14-inch tire a 10-inch one, with gains in size ranging up to 33 per cent.

Present Fitting Difficulties

Tire manufacturers, it is remarked, in trying to fit such larger sizes have found that in increasing tire width the center-line height must also be raised, thus increasing extreme tire diameter, and altering gear ratios; or, if such tire were to be kept within proper gear ratio, the wheel diameter would have to be reduced, the tire brought nearer the often-hot brake drum, and more labor and material would add to the cost.

Such drawbacks, it is contended, have been overcome in the Killen tire in which the air-core is increased but without altering the extreme outer diameter of the tread or the extreme inner diameter of the base beads in the relation to wheel diameter. Thus is the tire kept round under all conditions, except for the little flattening in road contact.

Says Unlike ⌓ Shape Tire

It is contended that a mistake is made in classing the Killen tire with the average standard round tire, or in regarding it as a type of tire of ⌓ form, as it has as truly round effective air-core as found in any standard round tire. The construction, with its short right and left walls between the widest part of the belly and the base beads, allows the setting of base beads wide apart as well as widely-spaced base bead seatings on a wide rim. Thus, too, is permitted an increased area of metal in the rim, whether it has a deep well (or dropped center) or is a standard detachable flanged wide rim, in substitution for the reduced area of cord and rubber in the casing.

The destructive action of heat on a tire, due ordinarily to casing flexing, road friction, or rubbing between tube and casing, or the sum total of flexing between rim and road, is familiar, but less remarked is the heat damage done especially to large tires set close to brake-drums, heat from the latter often lessening tire life by 25 per cent. The inventor of the new tire aimed to diminish tire perishing through heat by reducing the area of the flexing materials (cord and rubber) and by opening the bead space, as well as by adding to the metal rim surface, so that any heat generated would be quickly dissipated. To insure still further a cool-running tire the tread is designed so that the rubber is put more under compression and less under stretch. This

is said to obviate heel-and-toe heating action, said to be due to the rubber being displaced circumferentially.

To Increase Freight Hauling

One of the special advantages claimed for the Killen wider type of tire is that it permits the heaviest commercial loads to be carried on round pneumatic instead of solid tires, and at lower average cost. With the 14-inch type, it is said, 16-ton loads can be hauled, as compared with 10½ tons on 8-inch twin pneumatics with an overall width of 18 inches. An 18-inch Killen tire is said to carry 20 tons, and no reason is seen why loads up to 50 tons may not be carried safely and profitably on such pneumatics, either of single or commercial twin type.

Tires on commercial vehicles, it is claimed, can be easily fitted by using Killen's one-piece unit rim and disk wheel, which can be readily reversed on all standard types of chassis, giving the required clearance between the chassis and the wider Killen tire and between the brake drum and the wider Killen wheel by using when required a suitable hub-sleeve. The wheel may be fitted demountably on standard hubs with or without a hub-sleeve simply by boring the required size of center hole in the middle of disk.

Eliminating Elements of Risk

It is claimed that with the Killen wheel there is no danger of a detachable flange-piece leaving its rim, as is likely to happen with ordinary rims; and that the fitment of the wider-apart beads to a Killen type of rim makes bead-creeping impossible, either across the rim or circumferentially. The wider tire construction is also said to eliminate rolling and shimmying, as well as lessening another anxiety, the carrying of varying loads without having to change the size of the tire or increase air pressure. Incidentally, liability to side-wall fracture is lessened by reducing the area and weight of cord foundation. An essential novelty is the replacing of an eliminated part of the standard tire with an inner metal element forming the rim.

Some surprise is expressed because such part replacement of casing with metal had not been attempted before, as many also wonder why an effort had not been made to produce a round cross-section casing having a width greater than its center-line height. Doubtless many have tried to reach such a result, and the inventor of the new tire says that success came to him only after innumerable experiments. A firm believer in extra-wide tires for the load carried, he insists that they can also be produced economically. A squat section tire, he says, is fully 10 per cent cheaper to make than a round section tire of similar width, and has advantages over the round tire, especially when used on heavy commercial vehicles where big-diameter wheels are required to clear the large brake drums commonly used.

Acknowledgment is made to *The Rubber & Tire Review*, of London, England, for the data and illustrations used in this article.

Gas Mains of Rubber

A British engineer, noting recent gas-main explosions in London, deplores the use of cast iron for such conduits. It is too brittle, too easily oxidized, and coatings cannot be relied on, he says. As for steel, it crystallizes under vibration and rusts more readily than cast iron. He tells of using wire-imbedded rubber hose for carrying a large and continuous supply of gas under much pressure, and says that although it had been set beneath a much-traveled road, when dug up, it appeared to be none the worse for all the wear, weight, and quivering to which it had been subjected for about ten years.

More Rubber-Like Factice

FACTICE, which has retained the French term for "artificial" rubber since its discovery in 1847, coming into industrial use in France about 1870, and generally known as rubber substitute in America, is widely valued as a softener of rubber mixes, while aiding the incorporating of fillers, adding pliability and velvety finish, facilitating tubing processes, and easing the removal of products from molds. Its ability to lessen gravity in working dry reclaim and heavily-loaded stocks and to impart better aging have also counted much in its favor. It also finds much use in dipping cements and proofing solutions, and for erasers it is quite indispensable, with or without rubber.

Although there are many varieties of this resilient compounding ingredient, it is marketed in two general types: White factice, made by vulcanizing corn, soya bean, rapeseed, cottonseed, or other oil with a solution of sulphur chloride, lime or magnesia being added as stabilizers and antacids, and with inert materials graduating gravity to required limits; and brown factice, made by heating such oils with sulphur. Gums, waxes, etc., are added to secure various processing advantages. While factice resembles crude rubber in some ways, it is lacking, however, in tensile strength and elongation quality.

That factice may be markedly improved and more rubber-like properties imparted to the component sulphurized oils by a new solidifying process for the oils in which electrolytes are combined with the latter, is claimed by Dr. L. Auer.[1] The production of the new modified oils is based, he says, on the two-phase theory of isocolloidal systems, which includes the coagulation of raw rubber and the drying, bodying, and gelling processes of fatty oils. While they act like rubber in swelling in organic substances and are thermoplastic, unlike rubber, however, the molten solidified oils return to their original state on cooling. He says that in a mix of 100 parts of rubber to 50 of vulcanized solidified oil, the vulcanizate actually shows equal or higher tensile than a rubber mix lacking such oil, the latter behaving quite unlike ordinary vulcanized oils in rubber batches. Regarding the solidifying process as virtually a partial aggregation phenomenon, it is also held that the new solidified oils require less sulphur for vulcanization than the raw oils, and also that they absorb less oxygen and hence should give better aging to products than the older rubber substitutes.

[1] Abstract from paper on "The Application of Colloidal Chemistry in the Rubber and Fatty Oil Trades," delivered before the Manchester (England) Sections of the Society of Chemical Industry and the Institution of the Rubber Industry, December 7, 1928.

Tire Stocks

The Rubber Exchange of New York estimates that tires in hands of manufacturers on June 1 amounted to 17,800,000 casings of all types and sizes. This compares with 16,931,000 tires on May 1 as reported by the Rubber Manufacturers Association, an increase of approximately 869,000 tires in manufacturers' hands alone for the month.

Tires in dealers' hands at the same time are estimated roughly at about 40 per cent, bringing both manufacturers and dealers' stocks to between 24,000,000 and 25,000,000 tires. Automobile registrations show there are over 25,000,000 cars "rolling," based on the government registration figures of 24,629,000 cars at the first of the year. Therefore, inventories as of June 1 for the rubber industry disclose that stocks on hand are equal to no more than one tire for each car rolling. And some authorities are disposed to reduce the inventory total another 15 per cent owing to the number of unsold, slow moving, and obsolete sizes and grades in hands of dealers.

Rubber in Automobile Seatings

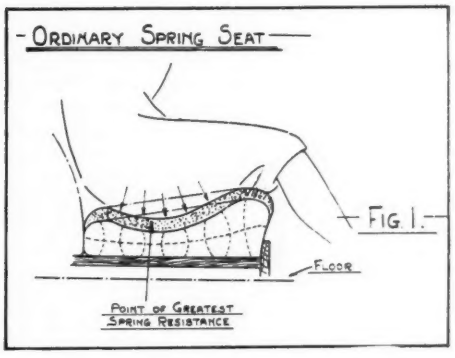
COLIN MACBETH

IN seeking to increase the effective use of rubber in the automobile, two methods of advance have been advocated by the writer: New ways of using rubber on cars of all types, and increased use of rubber in known ways, whether by propaganda or by improving the ways and means of using rubber.

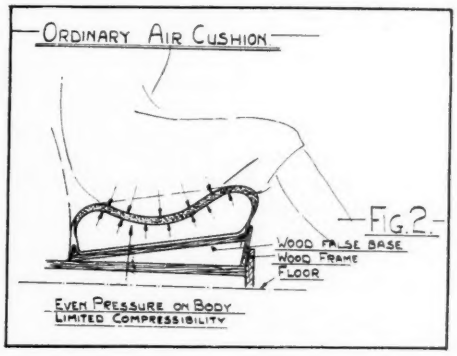
Realizing that the demand for increased traveling comfort is insistent, and that the comfort obtainable today is largely dependent on the pneumatic tire, the writer was led to concentrate on the ways of popularizing the pneumatic car seat which is frequently used in the British Isles and has long passed out of the experimental stage.

Automobile manufacturers today making in one factory 500 cars a week fitted with pneumatic seatings have proved that manufacturers and users are favorable to them, and as cars so fitted are highly competitive in price, it appeared desirable to find out why such seatings are not adopted by all other car manufacturers. In effect, what is good for one should be good enough for all, and if not, the reasons should be discovered, and steps taken to overcome objectionable features, if any.

Pneumatic seatings on the British market now are made by factories long established in the rubber industry, in fact some of them are pioneers in rubber manufacture. These manufacturers have special methods of ensuring that their products are satisfactory in the following respects: comfort on long or short journeys; prevention of unequal local pressure on the passenger; prevention of rolling or side sway.



There are wide variations in detail designs and constructions of the seatings supplied by different makers to ensure that the compression of one portion of a cushion will not result in appreciable bulging of another unloaded or more lightly-loaded area. It can be said that in this respect successful results have been generally attained; consequently pneumatic cushions in general use do give a fairly equal load-distribution. Rolling and side sway has been successfully counteracted.

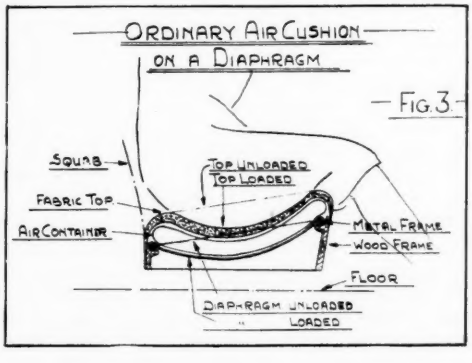


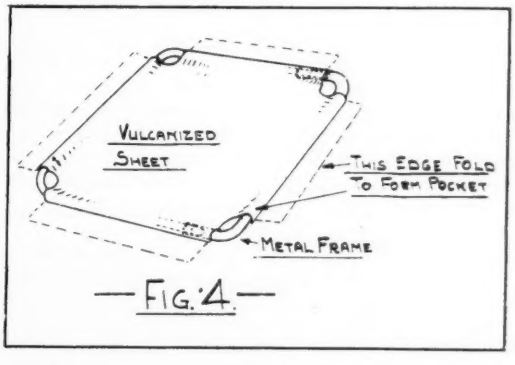
It was found that many car manufacturers, favorable in general to the use of pneumatic seatings, had found by experience that there were serious objections to their use. These objections can be summarized as follows: inability to absorb severe road shocks as well as spring seats; unusual appearance as compared with spring seats; higher cost than spring seats.

Dealing with these objections individually, the following comments are made in order to explain the writer's view.

The average passenger when seated is supported by a surface of approximately as many square inches as the passenger's weight in pounds; consequently the pressure on the loaded surface is about 1 lb. per sq. in. A fair average depth of air cushion unloaded is 3½ inches.

The air pressure in a loaded cushion of a size suitable for one passenger is somewhat less in pounds than the surface pressure on the actual supporting surface, as the total top-surface area of the cushion has a reasonable unloaded margin outside the loaded area, thus the contained air pressure must be about ¾ lb. per sq. in. when loaded and when the vehicle is standing.





In transit, shocks are transmitted to the cushion, and in being passed on to the passenger, the air pressure is increased momentarily. The amount of increase depends on the reduction of the volume of the air container. Thus, if an upwards displacement of the chassis of 2 in. takes place, and of this 1 in. only is passed on to the passenger, the compression of the air in a cushion of 3 in. depth would result in the air pressure being raised to 7.5 lbs. per sq. in. approximately.

Now we know that air cushions as made today will not stand such pressure, and we also know from experience that loaded air cushions do not actually absorb shocks to the extent of anything near 1 in. Consequently it has been found

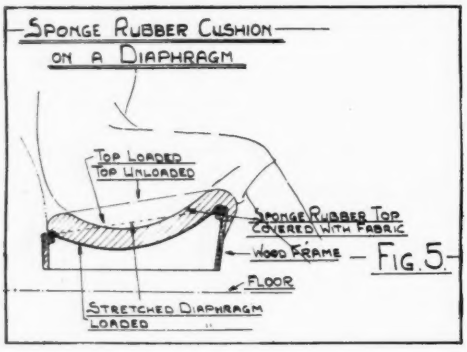


FIG. 5

that unless the depth of air cushions, as compared with their loaded surface area, can be greatly increased, they are of limited value as shock absorbers. In making this statement, it should be emphasized that this shortcoming does not detract from the very valuable properties of air cushions as a means of preventing local high pressures acting on the passenger such as occur with spring seats.

The necessity of using very low air pressures in order to ensure comfort has meant that when unloaded, pneumatic seatings sometimes have a flabby appearance which is not favored by the user. The high-cost objection does not necessarily apply to pneumatic seatings as in regular use and can undoubtedly be largely overcome on quantity production basis. The discomfort due to the lack of ventilation in seatings having insufficient fabric and other absorbent material on top of the rubber air bag has been objectionable, but experienced manufacturers have overcome such objections.

In seeking for a means of extending the use of rubber upholstery on behalf of the Rubber Growers' Association, it was realized that the rubber cushion presented a very promising field for increased rubber consumption, particularly when it is borne in mind that practically all types of rubber cushions use only first-grade quality of rubber, and the mixings require the use of a very high percentage of rubber. In this respect, rubber cushions can be stated to make use of mixings of the same high quality as is necessary in motor and cycle-tube rubbers.

The amount of rubber required to fit pneumatic cushions and squabs on an average four-seater car will closely approximate to the amount used for five tire tubes fitted to the same car.

The writer, therefore, came to the conclusion that the first essential to increased usage of all seatings using rubber in their construction was to get better shock absorption. This might have been done by increasing the volume of the air container as, for example, by connecting it by tubing to an air vessel disposed at some convenient point on the chassis. Such a fitment would have reduced the increase of the air pressure under shock and thus have increased the passenger's comfort. There were, however, obvious difficulties in pursuing such a course.

Another remedy, already having had some little use, is to support the air cushion on springs, thus using the air cushion for equal surface load-distribution and the springs for greater verticle deflection under shock. This remedy, however, would increase the cost and depth of the equipment and was considered as being a confession of failure.

In considering all known types of air cushions used as seatings, it was noted that while all made use of the pressure-retaining properties of rubber, yet none made positive use of the extensibility and elasticity of rubber. When this fact was realized and experiments were put in hand, it was found that the use of a stretched rubber diaphragm placed directly below the pneumatic or other rubber seating, is of very great advantage, as will be shown by consideration of Figures 1, 2, 3, 4, 5, and 6.

Figure 1 is an ordinary spring cushion, and it is obvious that at the point of greatest compression the pressure upon the passenger is greatest, and at this point discomfort occurs after a few miles of running.

Figure 2 shows an ordinary pneumatic cushion, and while this ensures an even pressure upon the body, yet the vertical deflection obtainable when the car is traversing irregular roads is limited due to the comparative light weight of the passenger upon a comparatively large loaded area.

Figure 3 is a similar type of pneumatic cushion superimposed upon a rubber diaphragm supported in a stretched condition by a metal frame. It will be noted that in the unloaded position the diaphragm is flat, but, when loaded, it becomes deflected downwards due to the weight of the body transmitted through the air cushion. This arrangement ensures an even distribution of pressure on the body as already obtained with pneumatic cushions, but, in addition, gives a great increase in vertical deflections, thus absorbing blows otherwise transmitted by the rough road to the passenger. A further marked advantage appears to be due to the fact that, when loaded, the seat becomes of trough-like form, and thus counteracts any tendency to rolling or side sway.

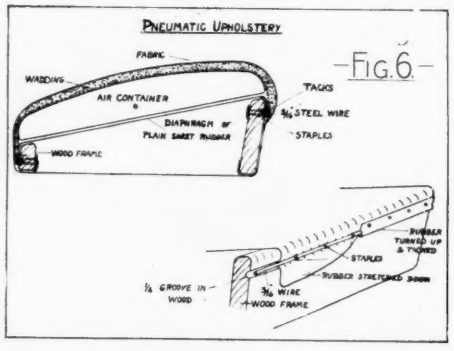


FIG. 6

The pneumatic cushion as in every-day use has to be very lightly inflated in order to ensure good weight distribution and comfort, and the result of this requirement is that there is a certain amount of criticism against pneumatic cushions as shown in Figure 2 in that they have a poor appearance due to the contained air pressure not holding the fabric covering in a smooth and unwrinkled shape. The use of the rubber diaphragm enables a sufficient degree of air pressure to be used to support the upper surface of the fabric covering, thus ensuring a good or normal appearance.

Figure 4 demonstrates that the rubber diaphragm can be made in a simple manner by cutting a vulcanized calendered sheet in rectangular form and folding the edges to form a

pocket in which the metal or, if preferred, wood frame can be enclosed. The use of the frame is, of course, to hold the diaphragm at the required tension and to prevent warping or distortion of the edges of the diaphragm when in place in the seating frame. It should be noted that the tension required on the diaphragm is very low, 5 or 10 per cent being quite sufficient, and thus the rubber is many hundreds per cent below the elastic limit at which it is easily capable of working to. It should be noted also that initial stretch in the diaphragm is not considered essential; advantage, however, is taken of initial tension to economize in rubber and keep a low overall height of the seating.

The comfort experienced on long journeys over rough roads with diaphragm-supported air cushions is remarkable by comparison with the same air cushions not having a diaphragm below them. Tests so far have not been limited to front seats but have been extended to rear-seat positions where it is found that the advantages of the diaphragm are still more marked, as passengers in that position are more subject to shock, and objections on the score of the unusual appearance of ordinary pneumatic seating are more serious.

Figure 5 shows a sponge rubber covering superimposed on similar diaphragm as used in Figure 3. It is hoped that with this type of seating, when used with the rubber diaphragm, there will be greatly reduced depth, weight, and cost, these features increasing its field of use. Sponge-rubber seatings are on test and so far are giving good results.

The same remarks as to cost and weight reduction apply to the pneumatic upholstery seating and the use of the diaphragm, and it is obvious that provided the diaphragm is supported on a suitably shaped wooden or metal stool or frame, a substantial saving in cost and weight can be made.

It is interesting to note that subsequent to the carrying out of these tests, certain pneumatic cushions have been patented which employ in a different way the principle of the diaphragm, making use of the diaphragm idea to allow for displacement of certain portions of the cushion under load and when subject to varying road shocks.

The method as shown of applying the diaphragm can be modified and reduced in cost as compared with the diaphragm as shown in Figure 4 by arranging it to be secured as per Figures 5 and 6, which enables the diaphragm to be made up from a piece of vulcanized sheeting secured to the wooden framework by wires and staples. When so arranged, the rubber diaphragm may be stretched to the requisite tension without difficulty.

Standard Methods of Test for Tire Cord

Adopted by Standardization Committee of Tire and Fabric Manufacturers

SEVERAL months ago an independent committee consisting of members from several of the leading tire manufacturers and tire fabric manufacturers was formed for the purpose of developing standard methods of test for tire cord. The standards of Committee D-13 of the American Society for Testing Materials were used as a background, but several changes and refinements, necessary to bring the methods to a point where they could be universally used, have been made by this committee.

The personnel of this Standardization Committee, as at present constituted, is as follows: S. A. Steere, Goodyear Tire & Rubber Co.; H. C. Hebden, The B. F. Goodrich Co.; W. A. Karl, Firestone Tire & Rubber Co.; M. Castricum, The Fisk Rubber Co.; W. R. Marsden, Kelly-Springfield Tire Co.; C. G. Miller, Ajax Rubber Co.; F. Kovacs, Seiberling Rubber Co.; B. H. Foster, United States Rubber Co.; R. H. Adams, Callaway Mills, Inc.; C. B. Finckel, J. H. Lane & Co.; L. A. Graybill, Bibb Manufacturing Co.; A. E. Jury, Winnsboro Mills; K. B. Cook, Chairman, Manville Jenckes Co.

As a result of several months' work, investigation, and research, this committee at its last meeting on June 7 formally adopted the following standard methods of test for tire cord, and will put them into effect in the near future:

METHODS OF TEST FOR TIRE CORD

1. TENSILE STRENGTH: (a) Condition. Condition to 6½ per cent moisture regain standard. Corrections to be made between the limits of 5½ per cent to 7 per cent by the following formula which allows 3½ per cent increase or decrease in strength for each 1 per cent variation from standard regain.

Tensile strength corrected to 6½ per cent moisture regain=

$$\frac{\text{Actual tensile strength} \times 122.75}{100 + (3.5 \times \text{actual percentage regain})}$$

Example: A cord having a tensile strength of 17 pounds with 6 per cent moisture regain would have a corrected strength at 6½ per cent moisture regain of 17.24 pounds. (b) Type and Jaw. Cam Clamp jaws; (c) Distance Between Jaws. Ten inches between nips measured along the line of cord; (d) Speed of Pulling Jaw: Twelve inches per minute; (e) Where Read. On dial to maximum point; (f) Capacity of Machine. Fifty pounds.

2. ELONGATION OR STRETCH: (a) Condition. Condition to 6½ per cent moisture regain standard. Corrections to be made between the limits of 5½ per cent to 7 per cent by allowing 1 per cent increase or decrease in actual stretch for each 1 per cent variation from standard regain. Example: A cord having 15 per cent stretch with 6 per cent moisture regain would have a corrected stretch at 6½ per cent moisture regain of 15½ per cent. (b) Type-Jaw. Distance between jaws, speed pulling jaw, same as under tensile strength; (c) Where Read. Start to 10-pound load; (d) How Read. Chart from recorder; (e) Tension Weight. Four ounces.

3. GAGE: (a) No. Cords for Test. First method, 4, second method, 6; (b) Size of Presser Foot. First method, ⅜-inch, second method, ¾-inch; (c) Pressure Applied.[1] First method, 4 ounces, second method, 7 ounces.

4. TWIST: (a) Cable twist. Twist taken in 10-inch cord; (b) Ply twist. To be the actual twist as put in on ply twisters called manufacturing twist. After taking cable twist, cut out all but one ply and divide twist by contracted length; (c) Tension Weight. Two and one half ounces for cable or ply.

It will be noted that the conditioned method of test is called for and corrections provided for both tensile strength and elongation to a standard moisture regain of 6½ per cent. These correction formulæ differ radically from anything heretofore used in the trade, for in the past all such corrections have been based on formulæ developed for square woven tire fabric. It has been found that in tire cord there is an increase in tensile strength of 3½ per cent for each per cent of moisture between the limits of 5½ to 7 per cent regain instead of 6 per cent as has commonly been used.

Comments, suggestions, or criticisms will be welcomed by this committee, and any company wishing to become connected with this work will also be welcome. Further work in the development of additional test methods and standard tolerances, together with standard methods for calibrating testing machines and the determination of a standard allowable maximum moisture regain for tire fabrics will be undertaken next.

[1] Pressure to be equivalent to that obtained by dropping a dead weight ¼-inch in vertical position.

A New Flexing Machine for Rubber

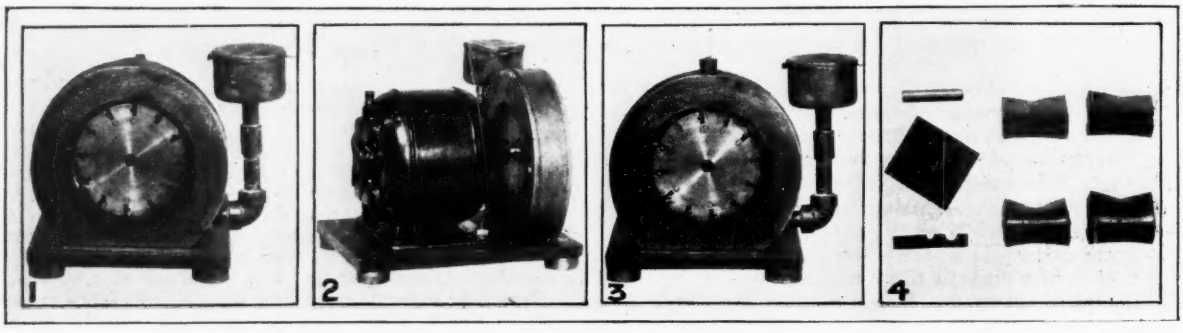
PHILIP M. TORRANCE and LESTER C. PETERSON

TREAD cracking is one of the most annoying problems occupying the attention of rubber chemists at the present time. While there is no doubt that tread design and the construction of the tire as a whole have great influence in producing this phenomenon, the nature of the tread compound itself is a very important factor. A real need has been felt in the industry for a laboratory flexing machine which would rapidly and inexpensively give results comparable to those obtained in road tests in order to study the effect that variations in compounding have upon this type of failure.

The authors have developed a simple machine which it was felt might be of interest in this connection. Illustrations 1 and 2 are front and side-view photographs of this machine. It consists of a rotor disk one inch thick keyed to the shaft of a ¼ h.p. induction motor and radially slotted about its periphery to take twelve samples. Around this is a steel ring placed off center in relation to the rotor. The test samples are mold-cured slabs of rubber 1 inch wide, 1⅛ inches long, and 3/16-inch thick, having two semi-circular grooves molded across their width. When placed in a slot of the rotor, a test piece is held in place by a tightly-fitting cylindrical steel pin which fits in one of the semi-circular grooves in the test piece and in a similar groove cut in the wall of the slot.

Illustration 3 is a photograph of the machine with twelve samples in place ready to run. It will be noticed that as the rotor turns, the test pieces are flexed through a 90° angle as they pass that point on the ring closest to the rotor and are straightened out again at the opposite side of the ring, not only by their own elasticity but also by centrifugal force. The second groove in the test piece is located on the inside of the bend and serves to localize the flexing action. Since the motor operates at a speed of approximately 1,725 r.p.m., considerable friction would be developed were it not for the fact that the samples are lubricated with glycerine, which is fed into the machine through a small hole in the flexing ring by a wick-feed lubricator noticeable to the right of the ring in the illustrations. The glycerine is kept from flowing out of the ring by retaining rings somewhat smaller in internal diameter located on either side of it.

Illustration 4 is a photograph of some test pieces. There are two views of an unflexed sample together with a locking pin as well as four bent pieces that have been flexed for 24 hours or approximately 2,484,000 times. The two that are cracked nearly through are duplicates of a stock accelerated with an aldehyde-amine type accelerator and containing no antioxidant. This stock was repeatedly shown to crack badly when run on a test car. The two uncracked samples, run on the machines at the same time as the others, are duplicates of the same compound after 1¼ per cent of antioxidant has been added. It will be noticed that cracking has barely started, there being several pin-holes in the surface of each. This stock when run on a car showed no signs of cracking.



In general, the results of this machine check qualitatively with the road tests run to date. The results obtained so far indicate that certain antioxidants are of value in checking tread cracking and others are valueless. Modulus and methods of processing apparently exert an influence on this phenomenon.

Particular care must be taken when using mill-sheeted stock for test pieces, for it has been found that "cold checks" and pronounced grain effects cause premature cracking, a phenomenon probably related to the premature cracking at the junction of the tread and sidewall of a tire.

By means of a thermometer inserted in a mercury well in the top of the flexing ring, shown in illustration 3, considerable variations in operating temperature were observed. Because of this it has been decided to mount the machine in a constant- temperature water bath before further work is done.

It is expected that the following advantages will result from this modification: that the machine will be able to run under identical conditions; that there will be an opportunity to study the effect of different temperatures through a wide range; and that lubricating samples will be simplified.

The authors wish to express their appreciation to the India Tire & Rubber Co. for permission to publish this paper, and to Olin C. Work for suggesting the simple holding device for the samples.

NOTE—Publication permitted by *Ind. & Eng. Chem.* Paper read before the Seventy-seventh Meeting, A. C. S. Rubber Division, Columbus, O., May 1, 1929. The authors are connected with the India Tire & Rubber Co., Akron, O.

Employment Stabilization

A. T. HOPKINS[1]

¶Quantity production and large labor aggregations have focused attention on labor problems.

¶It costs money to hire a man and to fire him. The more we fire him or let him fire himself, the more it costs.

THE World War made employers realize what scarcity of labor meant; what it cost to hire and fire men; and what turnover meant in dollars and cents. Restriction of immigration in these later days is only emphasizing and making permanent the lessons taught by the war.

A very interesting and important report has recently been published by The New England Council on applying research to control labor turnover. This report takes up in detail New England cases in which fact-finding and fact-interpretation have been used to stabilize both working forces and employment programs.

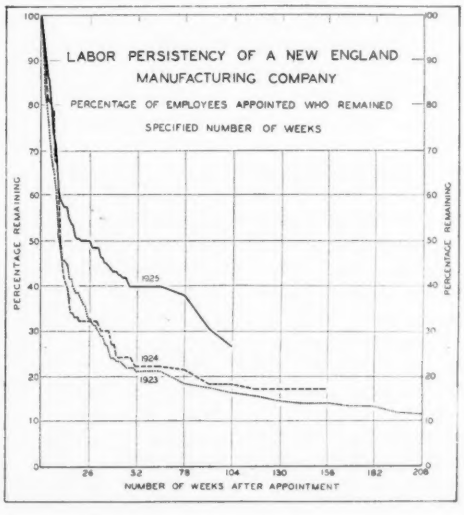
It is significant that in nearly every case, special emphasis is laid on continuity of employment and also that in nearly every case the companies have been able to develop sales and manufacturing policies that ironed out the peaks and valleys that formerly existed in production and employment.

This procedure has restricted unemployment and the later employment of untrained new workers and consequent high turnover. It has also improved the profit position of the company.

In one case the company set up a percentage of the profits as an unemployment fund to be paid to the help during shutdowns. In discussing the company attitude which led to the creation of the fund, the president said, "Fire insurance has been one of the strongest incentives to fire prevention; accident compensation has spurred on the safety movement; assumption of responsibility for unemployment relief will become a major incentive in the prevention of unemployment."

Another company has developed a plan for putting employes on a salary basis after five years' service. This has been followed by marked improvement in financial stability of employes, as shown by increased savings, purchase of homes or securities, and higher education of children. Pensions are being developed to the same purpose.

What are the facts of turnover? To arrive at an accurate conclusion, a suitable means of recording and measuring the facts must be devised. One way is through the use of a persistency or survival chart such as that shown in the accompanying graph. It is based on the record of all employes *hired* during a given period. The names and lengths of service of the employes are tabulated and a survival table and curve constructed, showing how many of each 100 persons survived each week up to the date of the study.


LABOR PERSISTENCY OF A NEW ENGLAND MANUFACTURING COMPANY
PERCENTAGE OF EMPLOYEES APPOINTED WHO REMAINED SPECIFIED NUMBER OF WEEKS
PERCENTAGE REMAINING
1925
1924
1923
NUMBER OF WEEKS AFTER APPOINTMENT

One company found on studying its hirings for the six-year period from 1920 through 1925 that on the average 30 per cent survived 12 months and 21.5 per cent survived 24 months. The best experience was in 1922 when 50 per cent of the new employes remained at least 12 months.

The 1920 showing was the poorest, with only 16 per cent of the new personnel surviving the 12-month period. The longer an employe has been with a company, the greater his chance of survival, the heaviest losses coming during the first week and the first month of employment.

Quantity production and the large aggregations of labor have focused attention on labor problems. We have discovered it costs money to hire a man and to fire him, and the more frequently we fire him or let him fire himself the more it costs and the smaller returns we get from him. It costs money to hire him, it costs money to train him or educate him for his job, and it costs money to get the work equivalent to the money paid in wages. Accordingly a good deal of study has been given to the problem and we will outline briefly what has grown to be good practice.

First, the selection is made by the best qualified person, who in the larger plants is the employment manager. He has analyzed the various jobs and knows just what each one is and the type of person who is needed; so he selects the person best fitted for the job. In many cases a set of simple tests is used to determine further the qualifications. Frequently a medical examination is made.

Next comes the period of training. There is usually a better and a poorer way of doing everything. The effort is made to teach the better way. When the group of workers is large enough to warrant it, a school is formed where the new employe is taught the best way of doing the job, and he is kept in the school until he is fitted to go to the department for which he was hired. By this means the best method is taught and the new worker becomes proficient in a very short time.

[1] A. T. Hopkins & Associates, 10 State St., Boston, Mass.

usually half that taken when he learns from his neighbor at the bench.

As most of the turnover takes place in the first day and week of employment and is doubtless due to unaccustomed surroundings, new work, strange faces, slowness in learning, and sometimes to dirty, dismal workrooms, cloak and toilet rooms, it would seem that proper training and introduction would reduce turnover, which it does in fact.

Where workers are largely non-English speaking, it is frequently advisable to give instruction in elementary English and arithmetic. Workers appreciate good working conditions, clean, well-lighted workrooms, good lockers, and sanitary facilities, but more than all they appreciate good management, delivery of material promptly and in good condition, good discipline, cheerfulness, and courtesy on the part of foremen and fellow-workers.

The factory council has proved its value along these lines. We are familiar with a number, and it is interesting to note that of recorded subjects for discussions, working conditions, including delivery and condition of material, far outnumbered all questions of wages. The council is fundamentally a channel of easy communication between the management and the worker and it is equally valuable to each because it is serviceable to each group in proportion to the thought and effort put into it. Above all, it pays to capitalize suggestions made by the workers.

The factory council tends, in the opinion of some foremen, to weaken their power. As a matter of fact this does not work out in practice, except perhaps in the case of the factory bully. The man who is unjust will find his wings clipped because his methods will not bear discussion. This, however, will be to the material advantage of management and labor, as management will discover a degree of cooperation on the part of the worker which is unexpected. Foremen's clubs will be found a proper corollary of the factory council and here again results will be proportionate to the effort, and any strengthening of the executive personnel will pay good dividends.

The matter of wages and bonus incentives is important. The country is facing a long period of labor shortage, so that the base wage rate for unskilled labor will be fixed by competition. Rates for skilled labor will be determined by the time taken to acquire skill. There are many different types of bonuses or incentives, but it is well to remember that an incentive that is paid or figured daily is correspondingly more effective than one paid weekly or monthly. Most large factories have adopted some type of bonus payment for increased production, because of its beneficial effect on overhead or burden.

Let us not forget the management, both major and minor, in this arrangement and above all we would emphasize the use of control figures by the foremen. Put the man into business for himself by giving him the material, labor, and expense figures for his department and paying him for his efforts in profit making. You are likely to be very pleasantly surprised at the results.

Rubber Division A.C.S.

New York Group

THE second of the 1929 series of the New York Group meetings was held in the Town Hall Club, 123 W. 43d St., New York, N. Y., on the evening of June 21. After an excellent and well-served dinner was enjoyed by the 155 members and guests who were present, the program was opened by chorus singing of N. Y. G. parody songs. The quartet of the Manhattan Rubber Mfg. Co. added greatly to the evening's entertainment by several humorous numbers, and a clever magician performed an astonishing rope trick.

In opening the meeting Chairman Wiegand spoke briefly on the important subject of artificial aging as affecting the life of rubber compounds; the behavior of rubber on aging, both natural and artificial, that is to be discussed in plain, non-technical language by well-known experts will be of great interest and value.

Natural aging of vulcanized rubber and aging by the Geer-Evans oven and the Bierer-Davis oxygen bomb methods were discussed by the following rubber chemists: J. M. Bierer, assistant factory manager, Boston Woven Hose & Rubber Co.; S. M. Cadwell, research chemist, General Laboratories, U. S. Rubber Co.; Stanley Krall, manager compound department, Fisk Rubber Co.; H. M. Sellers, chemist, Lee Tire & Rubber Co.; A. A. Somerville, vice president, R. T. Vanderbilt Co., Inc.; K. J. Soule, assistant chief chemist, Manhattan Rubber Mfg. Co.; W. W. Vogt, research chemist, Goodyear Tire & Rubber Co.

All of the speakers emphasized the difficulties of correlating the aging tests of accelerated aging methods with those obtained by natural aging, due, as one speaker stated, to the fact that accelerated aging is not a quantitative method.

Symposium on Aging

CORRELATION OF VARIOUS AGING TESTS WITH SHELF AGING. The various aging tests do not correlate closely with each other or with shelf or sun aging; there is a large probable error. There is no correlation between cracking under tension in the sun, deterioration in the sun or on the shelf, or at 158° F., or in the oxygen bomb. Correlation assumes a parallelism of deterioration that does not exist for all stocks, states of cure, contents of all sorts of ingredients and under all sorts of conditions. Good correlation is not to be expected between the varying aging tests themselves, nor between them and shelf aging, because shelf aging depends on temperature, light, access to oxygen, tension on the rubber, mineral fillers, copper, manganese, or iron and organic chemicals. Important factors causing wide variation in accelerated aging tests are humidity and temperature. Practical conditions of good aging are: (1) proper compounding, freedom from impurities, and correct cure; (2) the use of antioxidants.—S. M. Cadwell.

NATURAL VS. ARTIFICIAL AGING. A pure gum stock, a first grade, and a reclaim tread stock were aged by four different methods: (1) in the dark, (2) exposed to the weather, (3) in the Geer Oven, and (4) in the Bierer oxygen bomb. The results show that, for all stocks, there is no general correlation between either method of artificial

aging and either method of natural aging; therefore a general statement cannot be made in regard to a time in the bomb or oven which will duplicate a definite period of natural aging. However, the trend of the natural aging physical property curves can be duplicated by either artificial method, but the rate of artificial aging by either method must be determined for each particular stock. It is also very important that the method of artificial aging be one that will best duplicate the aging and service conditions to which any particular stock is subjected.—Stanley Krall.

Correlation Between Geer Oven and Natural Aging of Selected Compounds. Correlation of Geer oven and natural tests in a broad way are open to serious objections. For example, differences in degree of correlation between natural and artificial aging are found when different accelerators are used. For clear-cut figures of correlation between natural and oven aging it was necessary to select standard carcass and tread compounds all accelerated with POTG. Comparative tests of 1 year natural with 4 days in oven and 2 years natural with 8 days in oven gave results from which the following conclusions were drawn: (1) In the case of standard guanidine tread and carcass compounds the 4 and 8-day periods in the Geer oven at 70° C. correspond closely to 1 and 2 years of natural aging. (2) Due to the softening effect of the heat in the Geer oven, the modulus figures of the oven test and natural tests do not correlate.—A. H. Nellen and H. M. Sellers.

Aging of Typical Mechanical Goods Stocks. A study was made of 30 stocks separated into 3 groups according to their degree of pigment loading. The percentage change is given in tensile strength, elongation, tensile product, and modulus for each stock after each type of aging. The coefficient of correlation between the changes due to oven, bomb, and natural aging is given for each of the physical properties of each of the 3 classes of stocks. These data are not uniform enough to warrant definite conclusions, and as far as these data are concerned, there is little choice between the bomb and the oven tests as approximations to natural aging.—K. J. Soule.

Artificial Aging. How many hours in the oven or the bomb does it take to equal a given period of natural aging? That is to say, what is the equivalence factor? This question is constantly asked. The bomb test in particular shows quite a large spread, 16 hours being equivalent to 7 or 3 months' natural aging, depending upon whether tensile product or modulus is taken for comparison. It is probably asking too much of any single test to demand that it reproduce qualitatively all the phenomena associated with natural aging in the same degree on all physical properties, and that it is far better to determine by independent tests designed to accentuate one phase and suppress the others of the propensities of a stock with regard to oxidizability and after vulcanization.—W. W. Vogt.

A. A. Somerville gave an interesting talk illustrated by lantern slides showing that plantation crepe rubber soles which had been in use on tennis shoes for 5 years, compared favorably in aging tests with new crepe rubber.

A discussion of the papers that had been read during the evening then followed and many points of interest and value were explained. This closed one of the most instructive and enjoyable meetings of the New York Group.

Fall Meeting

The Executive Committee of the Division of Rubber Chemistry, Akron, O., has accepted the invitation of the New York Group to be its guest at a meeting in New York this fall, instead of attending the regular meeting of the Society in Minneapolis. The week of September 26 has been suggested as the best time for such a meeting. The committee discussed in a general manner the question of adopting a brief set of rules and regulations to guide the operations of the different rubber groups.

Los Angeles Group

Fifty-four attended the meeting and dinner of the Los Angeles Group, Rubber Division, A. C. S., at the Pollyanna Restaurant on June 14, and particularly enjoyed the talk on the nature and uses of zinc oxide as employed in rubber manufacturing given by Harry E. Outcault of the technical service of the New Jersey Zinc Sales Co., New York, N. Y. Interesting and informative also was the discussion which followed and which was led by Ernest R. Bridgwater, rubber technologist of E. I. duPont de Nemours & Co., Inc., Wilmington, Del. President E. S. Pond expressed much satisfaction with the attendance and the lively interest taken in the proceedings, and a standing vote of thanks was given the speaker of the evening.

FACTS AND FIGURES OF THE AUTOMOBILE INDUSTRY

THE number of cars and trucks produced in the United States and Canada during 1928 totaled 4,601,130 with a wholesale value of $3,162,798,880. Of this total, 4,024,590 were passenger cars with a wholesale value of $2,708,954,647, and 576,540 were motor trucks with a wholesale value of $453,844,206. Figures for the production of cars by body types reveal that 460,128, or 11.5 per cent, were open and 3,564,462, or 88.5 per cent, were closed cars. The wholesale value of motor vehicles and parts was $4,740,276,904, of which $2,708,954,674 was the value of cars in the United States and Canada, and $1,243,055,000 was the value of replacement parts, accessories, and tires.

Motor-vehicle registrations for 1928 totaled 24,493,124, an increase of 6 per cent. Of this, the passenger-car registrations amounted to 21,379,125, an increase also of 6 per cent; while the motor-truck registrations totaled 3,113,999, an increase of 7 per cent.

That rubber is an important product in the automobile industry may be seen by the following statistics. Of the 441,000 long tons of rubber consumed in the United States during 1928, crude-rubber consumption for motor vehicles amounted to 378,056 tons, or 85 per cent. For 1928, the value of original equipment of parts, tires, etc., was $841,580,000, of which the value of rubber tires was $209,580,000. The replacement of parts, tires, etc., was valued at $1,243,055,000, of which $630,055,000 was devoted to rubber tires, tubes, and repair materials. For 1928 the wholesale value of tire shipments included $676,692,000 for pneumatic casings, $103,102,000 for inner tubes, and $26,841,000 for solids and cushions.

RUBBER TIRE PRODUCTION AND SHIPMENTS

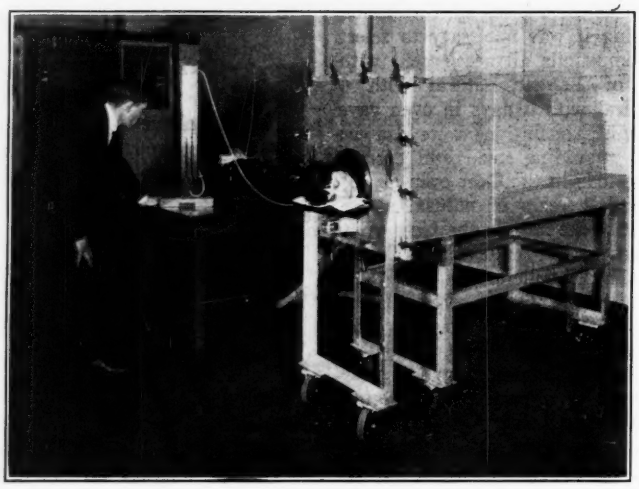
(Figures from Rubber Manufacturers Association)

	Production		Shipments	
	1927	1928	1927	1928
High pressure casings	29,722,480	26,106,193	30,576,680	26,386,606
Balloon casings	34,716,600	51,837,674	33,482,540	47,909,309
Solids and cushions	744,040	677,630	744,000	683,469
Inner tubes	70,822,750	80,179,841	72,895,900	77,126,918

Of the 3,956,138 persons directly employed in the automobile industry in the United States, 96,000 are tire factory workers. Rubber products with a value of $65,603,041 rank tenth in exports of manufactured products.

Machine for Producing Artificial Respiration Depends on Rubber

VICTIMS of accidents causing prolonged interference with breathing can now be treated by a respiration machine operated continuously by electricity, recently installed in Bellevue Hospital, New York, N. Y. It is introduced as the first satisfactory appliance for administering artificial respiration over long periods. It could have been employed, for instance, to take the place of twenty policemen, who worked in relays for five days to restore an unconscious woman.



New Mechanical Respirator Showing Rubber Collar Around Patient's Neck

Its range covers asphyxia due to electric shock, concussion, gas poisoning, smoke, and drowning.

This mechanical respirator was perfected after nearly two years of experiments by its designers, Philip Drinker and Louis A. Shaw of the School of Public Health, Harvard University, Boston, Mass. It was constructed at the request of the gas and electric companies affiliated with the Consolidated Gas Co., New York, N. Y.

The body of the respirator consists of a sheet-metal tank large enough to accommodate a man. The foot-end is sealed and the lid at the head-end clamps tightly against the body of the tank by means of refrigerator locks. The patient lies on a mattress supported by a bed-frame which is fastened rigidly to the lid, the bed and the lid rolling in and out of the tank on wheels.

The patient's head passes out of the tank through a special rubber collar bolted to the lid by metal rings with wing nuts and rests on an adjustable support outside the tank. The patient's body is thus enclosed in an air-tight chamber.

Alternate positive and negative pressures are applied to the air within the tank by means of electrically driven blowers. When pressure is lowered, the chest of the subject expands and air rushes into the lungs; when pressure is raised, the chest is compressed and air is driven out of the lungs. The subject is thus forced to breathe at the desired rate and depth in a manner which seems to be physiologically normal.

The rubber collars used for this apparatus were developed by the Hood Rubber Co., Watertown, Mass. Semi-lunar disks of thin metal placed on both sides of the collar prevent it from moving in and out with the pressure changes and permits the use of thin rubber about the neck. These collars must withstand pressure changes of from 0 to 60 cm. of water without appreciable leakage; they must be practically air-tight at low pressures; and they must not be uncomfortable for the patient.

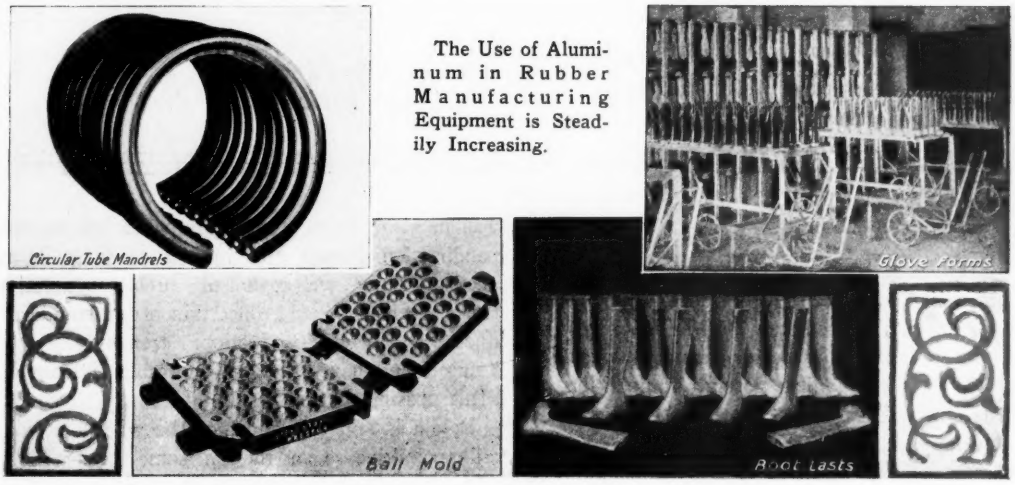
The first specimens of rubber collars used for this machine were made by hand and fashioned around metal forms, in order to determine the proper sizes for different people. Later, when it was found that the type of material was suited to the use intended and that the dimensions were correct, the different sizes were made by a molding operation. This involved the building of a rather massive mold with replaceable parts, in order to give different sizes without the expense of making individual molds for each size.

It was found that, by taking a piece of gum of the proper weight, it would flow perfectly and give an extremely thin article, especially where it needs to be thin around the neck portion. By a molding operation, it was possible to turn out a finished article in twenty minutes which formerly required an hour or more when built upon a form. The material used is a very high-grade gum, vulcanized with a low temperature accelerator, and contains an antioxidant so as to produce the best aging conditions. The stock will give about 3,800 pounds per square inch tensile strength and, as it is very thin, it has an ability to stretch within wide limits without tearing.

The production of this rubber part, although simple after the usual experimental work has been accomplished, is more expensive than the usual molding because of the limited mold capacity. The cost of molding could be reduced, however, by having multiple cavity molds, should the demand require it.

The machine is often tested by watching the pulsations of a soft rubber diaphragm substituted for the collar.

Besides, there is also a water gage which guides the operator in regulating the device. If air pressure gets too heavy, the gage or manometer overflows, safety-valve wise, and the pressure is automatically lightened. Through a rubber lock-like device in the side of the tank, the tube of a blood-pressure testing instrument is led. A supplemental steel container can also be placed over the patient's head into which oxygen or mixed gases can be forced for inhalation, if required.



The Use of Aluminum in Rubber Manufacturing Equipment is Steadily Increasing.

Aluminum Rubber-Manufacturing Equipment

Tube Mandrels, Glove Forms, Boot Lasts, Ball Molds

ALUMINUM can replace steel very advantageously for many items of manufacturing equipment in the rubber factory. This is because of several very practical reasons such as: (1) lightness of the metal which lessens the labor of handling; (2) its ability to resist corrosion in steam curing, thus extending its serviceability; (3) the high finish possible with the metal without excessive labor; (4) the freedom of aluminum from chemical reaction; and (5) its superior heat conductivity. A few important applications of aluminum have been recorded recently in this journal,[1] however, there remain a number of others that deserve mention.

In the case of drying ovens for raw rubber, trays of either aluminum sheet or of aluminum mesh are employed to avoid contamination of the material by splinters, scale, rust, etc. The heat-conducting power of aluminum is also a matter of considerable importance in this application. Aluminum conducts heat at a rate nearly four times higher than iron; therefore the use of aluminum trays leads to much quicker heating and reduction of drying time. This economy is added to by an economy in manipulation on account of the light weight of the trays, for an iron tray weighs as much as three of aluminum of equal dimensions and thickness of metal.

Thus manufacturers of brown factice, for example, would find aluminum an excellent material for the construction of the vessels used in combining sulphur and oil in making brown substitute.

The use of aluminum tubes as mandrels for the manufacture of hose or for inner tubes is favored in Europe and America. Their advantages over steel mandrels are very pronounced. For example, with steel mandrels the ends protruding beyond the hose or inner tube quickly become corroded and pitted under the action of the steam and sulphur in the vulcanizer. It is impossible to maintain a good surface, and for high class work the life of a steel mandrel is very short.

Aluminum, however, maintains its highly finished surface for a much longer period, also the mandrel makes it much simpler to remove the hose after curing.

Forms, lasts, and molds in cast aluminum are employed for making up and for curing all varieties of goods from boots and shoes to tires. For tire molds considerable strength and hardness of metal are required. Although it is impossible to obtain with aluminum the hardness of cast iron, adequate hardness is provided by a specially selected alloy.

Aluminum lasts for rubber footwear are quite satisfactory. The same is true of aluminum forms for dipped goods of all sorts. The surfaces of such forms are almost equal to those of glass as regards the smoothness and gloss they impart to rubber products and the ease with which these can be stripped off after the cure.

Aluminum forms are not attacked by any of the rubber solvents employed, but they must not be brought into contact with sulphur chloride which has a distinct corrosive action on them.

Molds of aluminum are superior in practically every important particular to similar molds made of iron. The alloys machine well, and a fine bright surface is readily attained. The ease of casting aluminum enables special molds to be obtained cheaply which in iron or steel, owing to the greater difficulty of machining, would be costly. For example, excellent aluminum molds can be cast from a plaster of Paris model, and an excellent imitation of a crepe rubber sole can be obtained from an aluminum mold cast by that method.

PIPER ATTEMPTED TO REMOVE COUPLING FROM A TWO-inch pipe while pipe was revolving in machine. Fastening tongs to coupling, they slipped on pipe itself and revolved causing tongs to strike piper on shin. Fracture of small bone in left leg. Piper had previously been instructed that such practice was improper. Will be disciplined after recovery and return to work.—Rubber Section *News Letter*, National Safety Council.

[1] INDIA RUBBER WORLD, April 1, 1929, p. 59.

EDITORIALS

Federal Aid for Planters

INGENIOUS at least, whether economic, feasible, or equitable, have been the panaceas of equalization fees, export debentures, half-billion revolving funds, etc., offered recently to tide farmers over lean periods, to protect them against foreign competition, to stabilize prices, to attract investment, and to generally stimulate development of their industry. While opponents have conceded that he deserves much consideration, they maintain that the farmer is not without fault, that he persists in overproducing, that he is unwilling to modernize equipment, disregards efficient merchandising, does not develop new uses for surplus products or convert waste into usable material, and pays too much attention to feeding men and too little to feeding factories.

Without passing judgment on the farmers' problems or the merits of the schemes of relief, it may be fairly observed that all American agricultural enterprises are not concerned with raising foodstuffs. There are others also producing indispensable materials required on a most extensive scale that have made no claims for national support. Such, for example, is the rubber-growing industry which, despite many obstacles, Americans are establishing at home and abroad. Seemingly they are as much justified in expecting government aid in their ventures as those who raise grain, etc. The latter even have the advantage of being able to market crops, or get a 90 per cent advance on them, within the year in which they are sown; whereas rubber planters must wait fully four years for shrubs and six for trees to mature, meanwhile taking as much of a chance as farmers on unfavorable elements and a longer range of price uncertainties.

Assuming that farm relief would provide a proper precedent for aiding rubber-planting enterprises, many unique questions such as concern guarantees to be given, forms of financing, etc., would have to be worked out; but doubtless suitable solutions would soon be found by experts. At any rate, it would appear that some measure of federal cooperation is fairly warranted, especially in view of American dependence on alien producers overseas for the great bulk of so essential a basic commodity as crude rubber.

* * *

Anxiety About Balata

WHILE a supply of rubber adequate for all conceivable requirements is assured for many a year to come, as much cannot be said of that other gum which also finds many useful applications in the rubber and allied industries—balata. Unfortunately it is still in the same weak economic position that rubber was in some twenty years ago when the world was depending on forests and jungles to meet its mounting needs. How well-managed rubber plantations have since reversed the old, uncertain order, standardized product, stabilized production, tremendously increased volume, and have made an enormous industrial development possible is now a familiar story.

Balata is still a product of the wilds; its collection is still primitive, even though some grades be prepared with care for the market. The regret is that a well-organized effort has not been made, as in the case of rubber, to produce on plantations a material for which there is considerable demand and must be increasing need, for it cannot be conceded that the ingenuity of inventors, technologists, and manufacturers in dealing with balata may soon be exhausted.

Balata trees may take thirty years or more to mature, yet the yield of 4 to 15 pounds per tree compares well with that of many trees that yield rubber bringing scarcely half the price of balata. Under scientific cultivation, tree strains might be developed that would mature sooner, give a gum with over 40 per cent gutta content, and even a more abundant yield. At all events, the situation warrants earnest consideration by industrial leaders. Some means should and undoubtedly could be devised to avert the possible disaster of an early decadence in balata production.

* * *

Air Mail for Dirigibles

THE U. S. Post Office Department states that while it may legally contract for the transporting of mail matter by airplanes, it cannot thus avail itself of the facilities afforded even by the best of dirigibles. However, the Goodyear-Zeppelin interests, planning for trans-Pacific carrying of mail in great lighter-than-air craft, are assured by the government that no discrimination is intended and to show its appreciation of the proposed service, it will urge the early passage of a law enabling giant airships to carry mail consignments on various ocean routes.

Unlike as in the operation of a merchant marine, which proved so expensive that the government finally had to shed its ships, or the fostering of aerial transportation with subsidies, as is the policy of some foreign powers, the Goodyear-Zeppelin interests will finance their project wholly. All that is sought is a chance to carry the mails on sea routes in less time than taken by steamships. Encouragement of such enterprise by the government would not only aid a worthy enterprise but would benefit the whole nation, and yet add nothing to the taxpayers' burden.

What the Rubber Chemists Are Doing

The Nature of Vulcanization. Part IV[1]

H. P. AND W. H. STEVENS

THIS paper discusses the limiting figure for combined sulphur, experiments with "low temperature" vulcanizates, vulcanization in solution, and the vulcanization of rubbers containing varying amounts of protein. The authors' conclusions are here quoted:

Conclusions

1. At low temperatures by means of accelerators it is possible to produce vulcanites containing "combined sulphur" considerably in excess of that required for the formula C_5H_8S. Such vulcanites may be obtained by vulcanizing at 100° with a variety of ultra-accelerators with and without zinc oxide as an activator. If zinc oxide or a zinc salt is used the excess coefficient cannot be explained by the presence of the zinc sulphide in the vulcanite.

2. The amount of sulphur combined with the rubber, given sufficient heating and presence of accelerator, is mainly dependent on the excess of sulphur present.

3. Extraction of the vulcanite with hydrochloric acid-ether mixture removes a part of the "combined" sulphur. A considerable amount is removed when the amount of combined sulphur is very large, but even then the amount of sulphur remaining is considerably in excess of that required by the formula C_5H_8S.

4. Vulcanization at low temperatures in solution in accordance with Whitby's procedure with the aid of accelerators also yields vulcanites with coefficients in excess of that required for the formula C_5H_8S.

5. The result of vulcanization at low temperatures is approximately the same, whether the rubber contains all the protein and serum ingredients, the usual proportion, or very little.

6. Extraction of sulphur from vulcanite with hot acetone vapor is not complete after 1,210 hours.

7. Having regard to the hydrogen sulphide and other volatile sulphur compounds evolved in appreciable quantities during vulcanization, it is evident that part of the combined sulphur results from substitution of hydrogen by sulphur. This substituted product is decomposed by the hydrochloric acid-ether mixture. It may not be possible to decompose the whole in this manner. Consequently, any "combined" sulphur in excess of that required by the formula C_5H_8S may result from substitution in the molecule.

[1] *J. Soc. Chem. Ind.*, Mar. 8, 1929, pp. 55 T-59 T.

Note on the Nature of Vulcanization[1]

W. H. STEVENS

THIS paper summarizing and commenting on some of the known facts of the process of vulcanization closes as follows: Whatever the mechanism of accelerator action, it would appear that the initial stage is a chemical reaction, for Naunton correlates accelerator potency as judged physically with general chemical activity (additive power).[2] In consequence, the accelerator reaction product, whether with rubber or sulphur, may be assumed to have a greater solubility than the accelerator itself in the bulk of the rubber or a greater reactivity; this latter is in accord with the ideas regarding the mode of action of catalysts,[3] i.e., that the catalyst enters into either chemical combination or sorption with one of the reactants, the resulting product having greater reactivity than either of the original reactants.

C. O. Weber originally suggested that the physical effects obtained by vulcanization were not due entirely to chemical reaction, but, in part at least, to a pectization of the rubber colloid.[4] This may be regarded as the precursor of present-day views of "polymerization."

Recent opinion would seem to favor the view that vulcanization, as judged by improved physical properties, is partly due to a true polymerization of the caoutchouc molecule. The means by which the polymerization is effected are, however, ascribed to different causes: thus, Whitby and Simmons[5] consider accelerators to have a direct polymerization effect and regard the "combination of sulphur and caoutchouc as only incidental," whilst Twiss[6] regards rubber-sulphur combination as essential and promoting resultant polymerization. In this connection it is interesting to note the observation recorded by Ames[7] that in the absence of sulphur diphenylguanidine causes disaggregation of the rubber, as indicated by increased plasticity. This, therefore, would not appear to be in accord with Whitby's view.

The suggested two-phase structure of rubber must not be lost sight of in a consideration of this problem, for it is reasonable to suggest that sulphur might be more soluble in one phase than in the other, and it would indeed seem that an examination of this point is greatly needed, since Pummerer and Pahl[8] have found that their "total" rubber (presumed to be a mixture of both phases) vulcanizes more rapidly than when "sol" and "gel" modifications (presumed to be the two phases separated) are vulcanized separately.

Summing up these remarks, it may be said that vulcanization can be regarded as the physical manifestation of the chemical combination of rubber with sulphur (or certain other elements), the mechanism of this process being a reenforcement by the resultant reaction product with or without coexistent sorption.

[1] *J. Soc. Chem. Ind.*, Mar. 8, 1929, pp. 60 T-62 T.
[2] Naunton, *J. Soc. Chem. Ind.*, 1926, 45, 381 T, 384 T.
[3] S. Green, "Industrial Catalysis," 1928.
[4] C. O. Weber, "The Chemistry of India-rubber," 1902.
[5] *Ind. Eng. Chem.*, 1925, 17, 931.
[6] *J. Soc. Chem. Ind.*, 1925, 44, 106 T.
[7] *Ibid.*, 1924, 43, 117 T.
[8] *Rubber Chem. Tech.*, 1, No. 1, 176.

Tackiness of Unvulcanized Rubber[1]

T. L. GARNER

THE following interesting observations and theory are quoted from the author's investigation on tackiness of unvulcanized rubber.

One important point must be borne in mind in connection with the technical application of antioxidants. It has been shown that the latter will protect rubber in such a way as to prevent depolymerization, and oxidation changes to some extent, thereby assisting the formation of an insoluble and presumably polymerized rubber, which is not observed in ordinary cases of exposure.

Thus, an insoluble rubber layer is formed on the surface of the exposed rubber and destroys the tackiness. Consequently, the use of much antioxidant in a mixing which is required to retain its tackiness while exposed in a factory to light for some time, does not appear to be good practice. Samples of mixed rubber containing 1 per cent of antioxidant were found to lose their surface tackiness much more rapidly than the blank mixings on exposure to light; the surfaces of the former became hard and dry.

The following theory is suggested. On mastication of raw rubber, globules are partially burst and also depolymerization of the hydrocarbon occurs, resulting in reduced solution viscosity. The tackiness of masticated rubber is due to the action of oxygen upon the depolymerized hydrocarbon and cannot appear until the latter is available. Thus, on exposure of unmasticated rubber the surface layer must first be depolymerized and then oxidized. Antioxidants in protecting the rubber from depolymerization and consequent oxidation allow the polymerizing action of light to become the superior effect. Consequently in a tacky rubber, repolymerization of the oxidized and depolymerized layer occurs to some extent, and in proportion as polymerization occurs so tackiness is lost. In ordinary masticated rubber, the oxidized depolymerized

[1] *Inst. Rubber Indus.* Vol. IV, No. 5, Feb., 1929, pp. 413-23.

rubber is distributed through the whole, but in special cases only the surface may be affected.

Tackiness will be destroyed by substances which exude to the surface and cover the tacky layer with a greasy film, e.g., stearic acid, or by substances which assist in any way the polymerizing action of light. Hence, where tackiness is desired, circumstances leading to these results should be avoided.

Zinc Oxide for Rubber Industry

HARRY E. OUTCAULT[1]

WHILE zinc compounds were doubtless used prior to mention of them in the literature, the earliest recorded reference to their use in the rubber industry is in U. S. Patent No. 6,066, 1849, granted to H. G. Tyer and John Helm, in which the well-known use of such compounds is covered. It was not, however, until early in the Twentieth Century that the use of zinc oxide as a rubber compounding ingredient came to be generally appreciated. It was found to possess a remarkable range of properties, imparting superior tear resistance, good abrasive resistance, adhesion of compounds, good aging, good factory working, high heat conductivity, low heat generation, high heat capacity, good elasticity, low hysteresis loss, high dielectric strength, high tinting power, good dispersion, uniforming of crude rubber, and activating of organic accelerators.

Three Production Methods

Three processes for the production of zinc oxide are in use, French, American, and Palmerton. In the French process, briefly, zinc is smelted from ore and the metal burned, the white fumes being collected by filtering through a cloth bag, the pigment so obtained being quite uniform in particle shape and size, nearly spherical, and about .25 Mu. in size. While the paint industry makes great use of this pigment because of its high tinting power, it also finds many uses in the rubber industry, as in the making of insulated wire, toys, and balloons.

In the American process, first used in 1852, ore and coal are burned together and the zinc oxide is caught as in the French process. The small portion of sulphur in ore and coal burns to oxides of sulphur and these are adsorbed on the zinc oxide particles. In small amounts, such sulphur compounds act as a wetting agent, giving easier dispersion, but in excessive amounts they can hinder dispersion by causing the zinc oxide particles to be held together thus preventing contact with rubber. However, on standing, the sulphur gases slowly combine with the zinc oxide and objectionable features are largely obliterated. The better grades have particles ranging in size from colloidal to about 1.00 Mu. While the average is about the same as in the French process, the wider range makes this pigment more useful to the rubber industry; and the fine particles enhance the reenforcing property and improve the activating.

Last Word in Oxide

The Palmerton process (U. S. Patent Nos. 1,522,096-7-8) is a two-step procedure like the French process, but differs from the latter in the fact that as soon as the zinc oxide particles are formed, they are promptly cooled to prevent increase in size, or agglomerating tendency. The best product of this type (Kadox), introduced in 1922, is an outstanding reenforcing pigment and is especially valued for its high activation. Production conditions are so controlled that the zinc oxide is formed at a uniformly fine particle size, and about twice as fine as that yielded by the regular French process. What, owing to such fineness, it may lack in tinting strength is, however, more than offset by its reenforcing quality.

The careful compounder will take pains to select for his mix the grade of zinc oxide best adapted for giving a product with desired physical properties. In some cases it is hard to determine by laboratory tests which grade is most suitable. Perhaps improved factory working of the stock brought about by one grade of zinc over another will make its use economical, or it may be that uniformity of cure from one batch to another, or even in a single batch, may reduce the number of defective articles so that one pigment may be justified over another. There are many tests, but a good comparison of zinc oxides may be obtained in the laboratory by determining their effect on the rate of cure of the compound, their relative reenforcing property, and their activating effect on organic accelerators.

Testing By Curing Rate

The length of time required to reach the optimum for each pigment will afford a good means of determining the effect of various zinc oxides on the cure of a compound. This property may be considered as the resultant of the accelerating effect of the total zinc oxide surface and the retarding effect of materials on such surface; and this becomes correspondingly important as the zinc oxide content of the formula increases. For such articles as heavy duty inner tubes, solid tires, fire hose, footwear, packings, etc., a uniform cure must be obtained for the best service.

Remarkable variability in optimum tensile as well as in the time required for each sample to reach its optimum cure, has been shown in a test of seven grades of zinc oxide, vulcanized at 153 C., in a compound of this type: pale crepe 920, sulphur 92, hexa. 4.5, zinc oxide 1,260. The graph depicting the results strikingly indicates the advantage obtained in high tensile strength and quick cure through using a zinc oxide of the finest, uniform particle size.

Determining Optimum Reenforcement

Having found the effect of the various zinc oxides on the rate of cure of a compound, their value as reenforcing pigments may then be more effectively determined. In order to find the optimum reenforcement that a pigment can impart to a formula, the test must be made with comparable cures, or else the formula must be adjusted for each pigment so that the optimum will be obtained in an equal period. Reenforcing effect is closely related to the size of the particles and their crystalline shape, and may be measured in various ways with the following or any good reenforcing formula: pale crepe 920, sulphur 37, hexa. 28, stearic acid 9, zinc oxide 1,035.

As an activator of an organic accelerator, the value of a zinc oxide depends to a marked degree on the type of accelerator used. Generally speaking, its value is contingent on the amount of zinc oxide surface in contact with the rubber, for it is the amount of zinc oxide that goes into solution in the rubber after first uniting with stearic or similar acid that eventually reacts with the accelerator and quickens the combination of sulphur and rubber. This property is in part at least measured by the optimum tensile and the time of cure needed to obtain it; and here again the finer zinc oxide scores best in the tests, although such tests also make evident the fact that there is undoubtedly a grade economically suited for practically every use, yet which can only be determined by careful evaluation in which every property is thoroughly studied.

[1] Representing New Jersey Zinc Sales Co., New York, N. Y. Abstract of talk given at the meeting of the Los Angeles Group, Rubber Division, Am. Chem. Soc., Los Angeles, Calif., June 14, 1929.

Butene

The accelerator butene is a reaction product of butyl aldehyde and aniline. It is a free flowing light amber colored liquid possessing no disagreeable odor, and no toxic effect on factory workers. It is a general purpose accelerator for rubber goods vulcanized in mold or in steam, accelerating well with the commonly used ingredients and adaptable to heavily loaded stocks, gum stocks, and compounds high in reclaim rubber and may be used in stocks of any color. Rubber goods accelerated with butene are characterized by high tensile strength and great resistance to tear, chipping, and abrasion. Its range of adaptability is shown by its use in thick products such as shackle blocks, solid tires, and rubber covered rolls curing at as low at 267°F., and in bicycle tires where the cure is made at temperatures around 324°F.

The critical nature of butene is shown by comparing it with DOTG. A given stock compounded with the proper amounts of butene and DOTG respectively give almost identical vulcanizing effect over a range of time in a mold at 5 pounds' steam pressure. It is concluded therefore that butene may be handled in the factory as easily as DOTG.

A. I. C. E. Meeting

The Twenty-first Semi-annual Meeting of the American Institute of Chemical Engineers was held on June 19, 20, and 21, 1929, at Hotel Bellevue Stratford, Broad and Walnut Sts., Philadelphia, Pa. The program included a symposium on solvents and a paper on the factors involved in the formation of carbon black from natural gas by D. S. Chamberlin and Arthur Rose.

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Rubber Heart Keeps Cat Alive for Hours

Dr. O. S. Gibbs, Department of Pharmacology, Dalhousie University, Halifax, N. S., has successfully completed experiments in which cats are kept alive for hours by an electrically-operated rubber heart after the natural heart had been removed. The apparatus that effects this phenomenon consists of a small rubber bellows fitted with special-type inlet and outlet valves. Two such are contained in a small brass box, and to each is attached a switch-gear so arranged that both must fill and empty together. The emptying is provided for by water pressure being electrically turned on to the containing box. Filling is accomplished and controllable by allowing the water draining out of the box to exert a slight suction. Into the heart of an anesthetized cat are placed the four tubes leading to the apparatus, an inlet for the systematic circulation and an inlet for the lung circulation, also one each for the outlets. The circulation is arrested for about five minutes. Such a preparation reacts to drugs acting on the circulatory system much as an ordinary animal, with the important distinction that the results are not complicated by the effect direct or compensatory on the heart. The apparatus thus enables a further analysis to be made of drug actions.

The experiments, it is hoped, will tend also to throw some further light on the question of "surgical shock" and thus may eventually prove of direct value to general medicine. It should be noted that these experiments are conducted not for the study of the heart but of the circulation apart from the heart and that, furthermore, they are but one phase of an investigation into the same question.

Boy Scouts' Trip Sponsored by Goodyear

Sixteen Goodyear Boy Scouts, selected on merit rating, left Akron, O., on June 15 for a two weeks' trip through the East by motor bus and automobile, the guests of the Goodyear Tire & Rubber Co. Washington, Baltimore, Philadelphia, and Niagara Falls are among the outstanding points of interest which the scouts will visit.

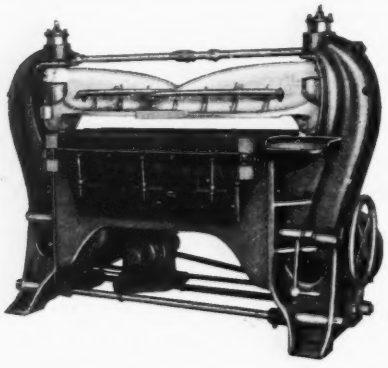
Those making the trip from Akron will be: Clarence Howard, Elmer Businger, Eric Prince, Carl Duvoll, Clifford Farmer, William Frew, Donald Hare, Robert Hare, Fred Tarbox, Fred Horn, William Leavenworth, Edward Rich, Homer Coy, Jr., Woodrow Garrison, and John Miller. They will be accompanied by G. A. Romacker and P. R. Schreiber, scout masters, and by Paul E. Brunswick, secretary of the Goodyear Boy Scouts.

New Machines and Appliances

Twin Clicking Machine

COST is such an important factor in fabric cutting, particularly in the manufacture of footwear, that highly efficient equipment which can be operated profitably and safely is a necessity.

From experience the manufacturer of machine equipment has found, in common



Ideal Clicking Machine—Model F

with hundreds of users, that clicking machines most adequately meet every condition and requirement in this field. Such machines of various sizes and of varied scope have been available for a number of years, but a new member has recently been added to the group, namely, the Ideal Twin Clicking Machine—Model F, here pictured.

This machine improves the quality of cutting; increases the speed of production; permits more economical manufacture; and in every respect safeguards the operator from injury. It will handle material up to 45 inches wide, and may be obtained with factory or motor drive. It is equipped with aluminum arms and with an arrangement for raising or lowering the die-block table to allow for variation in height of dies and to compensate for wear of the cutting block.

In brief, this machine is constructed to meet every requirement in the most efficient manner and is in successful use in many manufacturing plants.—United Shoe Machinery Co., Albany Building, Boston, Mass.

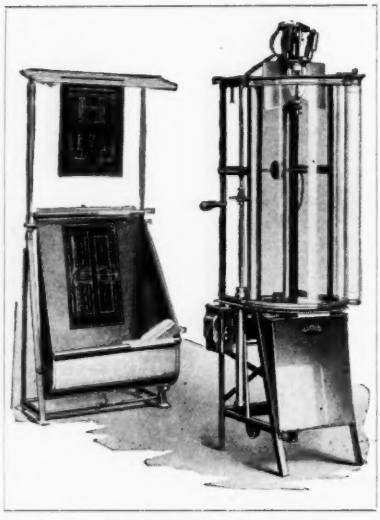
Blue-Printing Machine and Sheet Washing Unit

THE apparatus for blue-printing here illustrated comprises a printing and a washing unit. This equipment is designed particularly for use where only a small quantity of prints are required. The construction of the machine is thoroughly mechanical and occupies but very small floor space. The framework is so rigid that it is shipped set up.

The machine consists of a half-cylinder of glass supported in a felt-lined metal frame. The tracing and blue-print paper are held in contact with the glass by a curtain mounted on a spring roller. The arc lamp is specially designed and has an efficient reflector. The lamp also is provided with a satin-finished aluminum reflector, which gives the best possible distribution of light. The drop of the lamp is controlled by a patented cylindrical oil control, which provides regulation for any required printing speed. A small globe of heat-resisting glass is used to enclose the lamp carbons.

With a clear tracing and suitable blue-print paper, using a 110-volt direct or alternating current lamp, a 24 by 36-inch blue-print can be made with one drop of the lamp in the cylinder.

The sheet washer shown at the left in the picture dispenses with the open bath



Pease Junior Blue-Printing Apparatus

tray, dripping prints, and wet floor. The prints are held at one edge by spring clips at the top edge of the sheet-metal apron of the washer, where they receive the flow of wash water from a perforated water pipe. The drip is drained off from the basin below. After the first washing the color of the blue-prints is intensified and an exceptional non-fading quality obtained by applying to the surface a 5 per cent solution of potassium bichromate. This is conveniently done by a wide brush after the print is suspended for washing. After the bichromate has been applied, the excess is washed away in a flow of clean water. All the washings are caught in the tray at the base of the sheet and are piped off at that point. A drying rack of rods on which to hang the prints for drying is supported by upright rods over the washer.

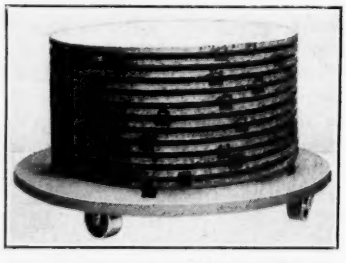
A blue-printing outfit of this sort not only saves much time in the drafting department, but affords a ready means for the reproduction of sketches, construction drawings, charts, graphs, test data, and many other matters of which duplicate records are needed for operating or executive purposes.—The C. F. Pease Co., 813 N. Franklin St., Chicago, Ill.

Curing Pans

FOR curing small section tubed rubber products in soapstone some sort of pan is used, generally of circular form. Unless made with an idea of special adaptation to the work, the ordinary pan leaves much to be desired.

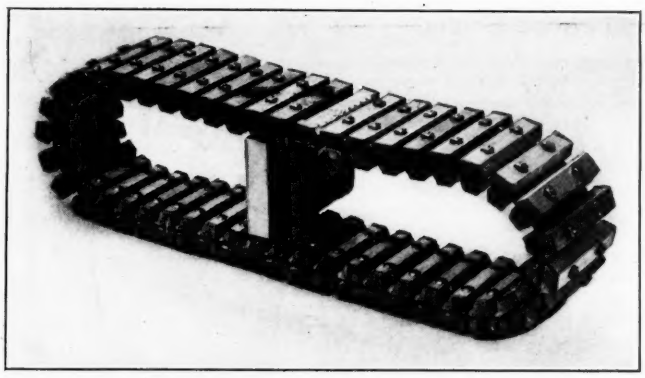
The illustration herewith represents a stack of tube pans developed to receive raw stock from the tubing machines, and made of either 14-gage black or galvanized steel with a side flange or wall varying from ½ to 2 inches in height to suit individual requirements. They are provided with clips to permit stocking and prevent the rubber stock from sticking. They are also furnished with or without center handles for lifting and are made of varying diameters. The most popular size is 42 inches in diameter. Sometimes they are furnished with a 6-inch hole cut through the center of each pan to aid circulation of steam through the stack in the vulcanizer.

For the convenient movement of stacks of curing pans in shipping, inspection, and curing rooms, a circular low platform truck is provided as pictured. This may be made in various diameters, but the one



Curing Pans and Platform Truck

shown is 30 inches in diameter with a 1-inch flange, in 12-gage material supported by two swivel and two stationary casters which bring the top of the platform approximately 4⅛ inches above the floor. The casters are substantially welded to the top and the material is heavy enough to prevent its bending readily when run against other objects.—The Commercial Shearing & Stamping Co., Youngstown, O.



Reeves V-belt Construction

Variable Speed Transmission

IT has been well said by an engineering authority that infinitely adjustable speed control has definitely become one of the most vital factors in modern production. Careful attention is being devoted to proper machine speeds, synchronizing of operations, and speed regulation of material-handling systems in almost every line of industrial activity.

Variable speed control was introduced forty years ago in a certain large rubber shoe plant for synchronizing the speed of conveyers receiving stock from a calender. In this instance the device employed was the Evans friction cone transmitting power by means of a leather belt. A greatly improved variable speed transmission now widely used is the Reeves. One of its most important component parts is the V-belt, shown in the illustration, that transmits the power from the driving to the driven shaft.

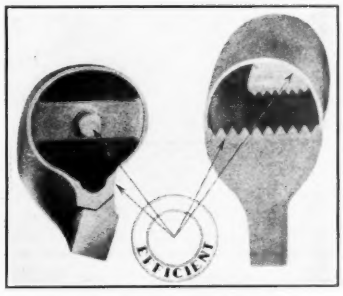
By reason of the action of the cone-shaped disks, this V-belt is shifted over diameters which can be increased or decreased on each shaft at option of the operative. The belt proper is the highest-grade special test rubber belting. This has been found more efficient than any other type on account of the fact that it combines maximum strength with minimum of stretching. Furthermore it makes possible a very strong splice of interlocking type.

To this rubber belt, as a central body, two rows of hardwood blocks, one row above and one below the belt body, are securely clamped by carriage bolts. The nuts of the bolts are on top, locked in place with lock washers. The ends of the blocks are beveled to form a V-shape exactly corresponding to the V-throat formed by the cone-shaped disks at each end of the transmission. The block ends are tipped with close-grained special tannage leather to give the highest coefficient of frictional contact against the cast-iron driving disks.

This construction gives uniform pressure and insures a level true-running V-belt easily shifted from one speed to another.—Reeves Pulley Co., Columbus, Ind.

All Steel Tire Core

THE serious problem of handling the building cores used in the construction of large bus and truck tires has been solved and the burden of their manipulation greatly lessened by the invention of the "all steel" core shown in the accompanying illustration.



Sections of De Mattia Core

Referring to the salient features of the new core, it should be noted that one of 7-inch cross-section weighs less than 135 pounds. The walls are of uniform thickness of steel, machined both on the inside and the outside of the profile to accurate predetermined dimensions. This is one of the weight reducing and standardizing features. All joints and sectional registers are of steel, which affords the best protection against wear. The trimming line at the toe of the bead will withstand the greatest amount of use because it is all steel. The inner part or toe of the core may be fitted to any style of core chuck to collapse the sections or to be clamped together in the usual way.—National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

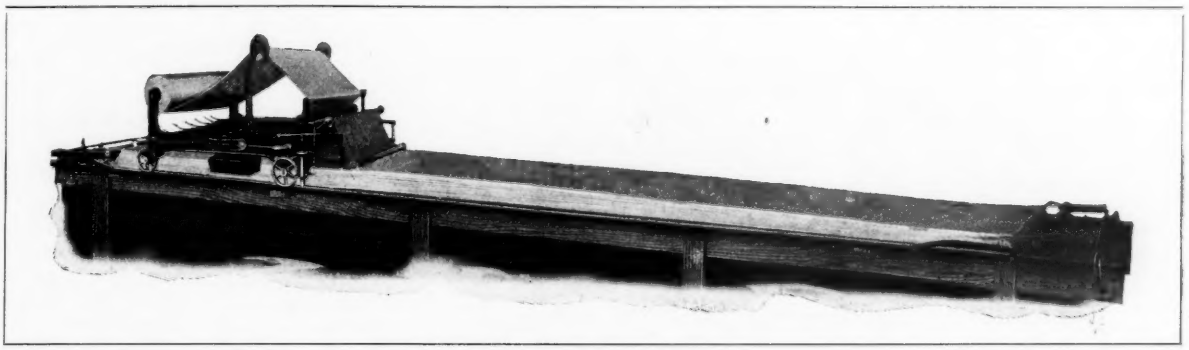
Cloth-Laying Machine

IT is necessary to lay sheet material out in plies in the cutting rooms of factories making footwear, tennis, weatherproof clothing, auto tops and various other products cut from plain or rubberized fabric. In many plants the laying-out process is done by hand involving much time and labor. A somewhat unusual machine is here pictured, the purpose of which is to expedite this work and eliminate the heavy labor. The machine gives a double saving of 50 per cent because it permits one person to put a lay of goods on the table in half the time ordinarily required for two men to do the work by hand. The machine carries the load of stock and so does away with the heavy lifting and drudgery of hand laying.

In using the machine, it is necessary only to mount the roll of goods in the carriage, pass the end of the cloth through the tension rods, and go ahead with the work, starting at one end of the table with the end of the goods held in a clamp. The lays are piled up by running the carriage back and forth on the table; this is light and easy work.

In order to handle all widths of goods the laying machine is built with a telescoping frame which may be contracted or expanded at the will of the operator.

Automatic cloth-catchers are a part of the machine and are so designed that when the carriage reaches the end of the lay, two steel arms open automatically and grasp the goods, holding it firmly in position while the machine is run to the opposite end of the lay where the same operation is repeated. One of the automatic catchers is placed near the end of the table



The Cutter Cloth-Laying Machine

and is stationary. The other catch is movable and can be located at any point in the length of the table in order to better accommodate the different lengths of fabric lays.

Other features of the machine are that it counts the lays automatically and lays the goods with a perfectly straight cutting edge. The tension device is so arranged that goods of any weight can be handled with equal facility.—Eastman Machine Co., Buffalo, N. Y.

Reclaimed Rubber Moisture Expeller

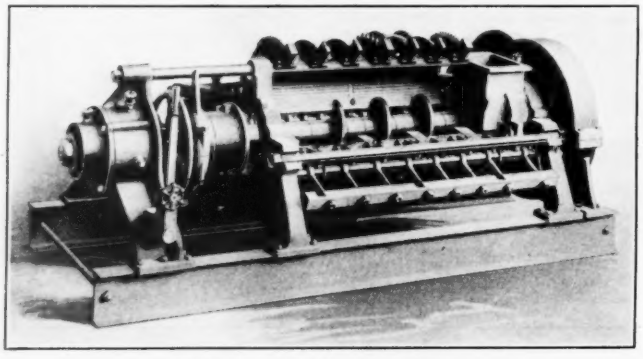
THE rapid and continuous expelling of moisture from the fine output of the digesters in rubber reclaiming is essential that the continuity of production be not interrupted. A simple and efficient machine for this purpose is here pictured. It is a powerful machine acting as a horizontal screw press.

In the illustration, the barrel or cage is open so that the internal working parts may be seen. At the right end of the machine is seen the square opening of the feed hopper into which the moist reclaimed rubber is fed. The stock is picked up by a series of worms on the main shaft, which force the material toward the discharge end at the left in the picture. At this end is a plug or choking device which is adjustable by a hand wheel to different sizes of outlet or stock thickness.

After the material has been fed into the hopper in a continuous stream and is steadily being discharged at the other end of the machine, the plug is set up, choking down the discharge opening. The worms acting on the material cause a pressure which expels the liquid from the rubber.

The barrel of the machine consists of a series of bars spaced a sufficient distance apart so that the expressed liquid may escape from the expeller. The machine is continuous in operation and the wet material fed in at the hopper is discharged quite dry at the outlet.

This machine is either belt or motor-driven and well adapted for hard and continuous service. Further details will be supplied by the maker.—The V. D. Anderson Co., Cleveland, O.



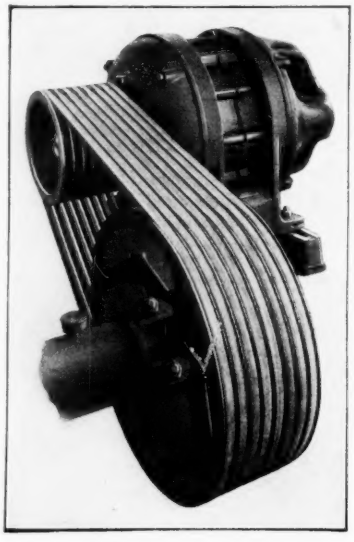
Anderson Moisture Expeller

Texrope Drives

AN efficient substitute for belts, chains, and gears that is used in many industries including rubber factories, is the Texrope drive. This consists of a number of ropelike belts of rubber and duck construction, molded and vulcanized in trapezoidal cross-section. The driving and driven pulleys are suitably grooved to accommodate the texrope strands, of which there may be from six to twelve, according to circumstances and amount of power to be transmitted.

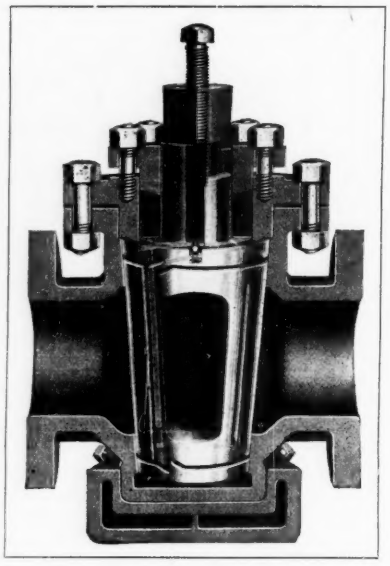
This drive is particularly adapted to short center situations, such as pictured in the accompanying illustration, and for either reducing or increasing the speed of the driving motor.

One advantage of this drive is that if one or more ropes constituting the drive should break, the unit will still operate with those remaining, as there is an ample margin of strength over the rated capacity.



Typical Texrope Drive

The manufacturer recommends them as adapted for speed reduction up to 7 to 1. These texropes are made without splices and obtainable in any length up to 150 feet. —Allis-Chalmers Manufacturing Co., Milwaukee, Wis.



Barco Plug Valve—Type LCI

Lubricated Plug Valve

THE valve of special construction, here pictured, is particularly suited for water, air, oil, gasoline, as well as steam, at low pressures. It possesses all of the much-sought-for advantages of full direct port opening with one-quarter turn of the handle or wrench.

The plug is held securely in its seat in the valve body by mechanical means. The one gland serves the double purpose of preventing leaks around the stem of the valve and of holding the plug against the body at the desired pressure. The large gland is used so that the valve may be repacked without any danger of the plug blowing out and causing injury. The lubricant is used in this valve solely to effect ease of operation and to prevent deterioration from wear, corrosion, rust, etc.

The workmanship on the valve is such that it is absolutely tight without the use of lubricant. They are available in practically all types and sizes of metals best suited for the service required, or high pressures and temperatures as well as low pressures and temperatures and vacuums.

These adaptations render them suitable in essentially every industrial plant for liquid materials and fluid pressures such as are met with in rubber manufacturing and reclaiming plants.—Barco Mfg. Co., 1801-1815 Winnemac Ave., Chicago, Ill.

Shallow-Type Switches

THE Merchandise Department of the General Electric Co., Bridgeport, Conn., is now manufacturing a type of switch which is totally enclosed, thus preventing plaster and dirt from getting into the mechanism when it is installed and before decorating has been completed. This design uses standard flush switch mechanisms and fits standard outlet boxes for flush mounting. They are rated five amperes, 250 volts, and 10 amperes, 125 volts.

Rubber Factory Topics

Rubber—An Engineering Material

A practical rubber man writes us that during the war he manufactured a device on which recruits were taught to aim and shoot rifles and side arms before they went to the range for practice. It was a foregone conclusion that a recruit who could pass as a marksman with this device could qualify equally well when he was given real cartridges to fire. The miniature targets supplied were held in a molded rubber block which served also for the "dotters" to impinge against.

The thousands of shots which these rubber blocks would stand without serious damage were taken as a matter of course. Looking back at that experience, the writer feels that it was the forerunner of his contact with rubber as an engineering material—the performance of these millions of blocks showing that rubber was entitled to a rating alongside of brass and steel.

Since that time, other contacts and uses have shown that rubber should be included in the list of available materials which every engineer, factory superintendent, draftsman, and workman keeps at hand, either mentally or in reality.

Rubber Bearings

Rubber bearings are of inestimable value in marine work and on machinery where liquids are always present. The self-lubricating quality of rubber, when wet, and the fact that it does not score the shaft render it invaluable for boat propeller shafts, for washing machine bearings, and for machines on "process" work where it is necessary to support shafts in water all the time. The combination of a rubber bearing and a shaft of stainless steel or nickel steel has taken all the curse out of such construction.

Conveyer Belts

Conveyer belts owe their life to rubber. Sand, ore, crushed stone, ashes, gravel, etc., are dumped hit-or-miss on such belts and the latter go on their ways rejoicing. One side of such belts will have a coating of rubber 1/16-inch thick and the other side (the carrying side) will have a coating 3/16-inch thick. This little cushion of rubber is the buffer that takes all the shock of sharp pieces dropped on the belt—out of doors, very little care, subjected to the hardest kind of service. Often, service that would wear away steel or concrete in a few months is service where rubber will stand up for years.

Drilling Glass

The drilling of glass is a job that comes into machine shops very often. This usually is in connection with plate glass for office table-tops, library equipment, bank fixtures, and so forth. Or, it may have to do with lighting fixtures or general building construction. The shopmen immediately throw up their hands, as they picture broken glass and dulled tools.

It's easy enough to cut glass—the trouble is in cracking it. And right there is where rubber steps to the front. If the glass piece is placed on a rubber pad and a piece of wood used for clamping, 75 per cent of the risk is eliminated.

Figure 1 shows a set-up for drilling such a piece of glass. It may easily take half an hour to collect material for such a job the first time—and then only two minutes to do the job. If there are several holes to drill, you can "make time" on the succeeding holes; or, if such a job comes up again, you can go right ahead with confidence and the set-up time will probably not be more than ten minutes.

The rubber pad adjusts all unevennesses and takes away that hard face-to-face contact which cracks the glass in clamping. The particles of glass and the abrasive used do not act unfavorably on rubber. Any abrasive compound, like carborundum powder, may be used and as soon as it starts to cut, we also have glass cutting glass.

The wood clamp may be a piece, say, 7/8 by 3 by 7 inches. It should have a hole in it about three times the size of the "drill" and within this hole the abrasive, plus the water used, forms a puddle that keeps everything cool and prevents the abrasive from running away. A piece of steel tubing is the best sort of a drill, although brass or copper will do in a pinch.

Drilling a 3/8 hole through 3/8 glass may be done in four to five minutes by this method and without danger of cracking or flaking out on the lower side. The latter is the ruination of many otherwise successful jobs. In drilling the hole mentioned, the drill should run 200 r.p.m. or more and it should be lifted from the work at least twenty-five times to allow water to carry fresh abrasive under the drill's end.

The use of rubber pads and similar methods of setting up is applicable to jobs of hole making in stone slabs for switchboard work, vaults, and lobby decoration. Where rubber blocks are not available, heavy matting may be used, or several thicknesses of rubber packing or old printers' "blankets."

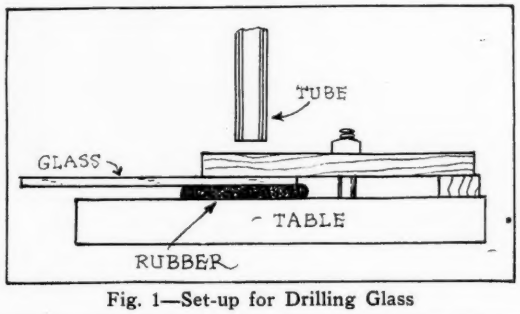


Fig. 1—Set-up for Drilling Glass

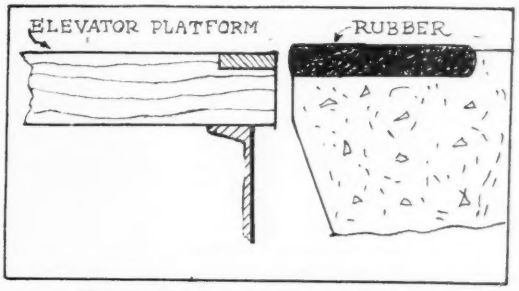


Fig. 2—Eliminating Platform Bumps

Eliminating Bumps

Wear of industrial floors is always a subject of interest. Metal truck wheels play havoc with concrete and wood where they follow definite tracks day after day. The worst spots are found where a gap has to be spanned—they are like railroad tracks in winter when there is a space between every pair of rails and a constant pound ensues that gradually batters down the hard steel.

A joint in the floor always grows worse from this truck abrasion. A machine or bench up to which trucks are rolled with a thump is a location where the reaction soon wears holes in concrete or wood. And getting on and off of elevators has always troubled maintenance men to keep the floor in shape. Here, the necessary clearance and the uneven heights of stops impart a bump or a drop to every truck movement on or off.

The nicest way to overcome such an unsatisfactory condition is shown in Fig. 2. Rout out a section in line with each wheel, wide enough to include the probable side

movements, and set in a rubber pad. Such a pad may be ½ or ¾-inch thick. This may be fastened by screws or clamping strips and it should be slightly higher than the adjoining floor. Assuming the life of rubber as four years, the plant may expect freedom from floor troubles at these points for all of that time—and then the simplest kind of a renewal. The elevator platform may be so fitted, too, if desired, and the same trick has helped at the foot of ramps.

Rubber-Packing Lubrication

Molded U-form rubber packings are generally employed to hold the pressure of hydraulic presses. The rams of such presses are very commonly lubricated with heavy grease of some sort, the nature of which is destructive of the rubber causing it to soften and leak. The cost of frequent replacements and loss of production can be lessened indefinitely by the simple expedient of using fine pure dry graphite as a lubricant. This is applied by simply placing around the ram where it enters the press cylinder a supply of the graphite. The raising and lowering of the press causes the ram to pick up and become surfaced with the graphite. The ram and packing are thus both automatically lubricated without damage to the rubber packing, which lasts indefinitely without further attention.

Maintaining the Factory Floor

The problem of maintaining in good condition the concrete floor in rubber and other industrial plants is an annoying and expensive one, to say nothing of the possibilities that holes and breaks may cause more or less serious accidents. In the case of wood floors the matter of waterproofing them is one of much importance, especially where leakage through of water from any cause may result in damage to material, machines, goods, or stock in process.

It is a satisfaction to know that floor troubles of the sort referred to are removable by the proper application of a hydro-proof floor-resurfacing material, which is at once waterproof, economical, resilient, and dustless. This material is mixed according to a formula, a sample of which is as follows for resurfacing industrial floors:

Mix thoroughly together, by volume, one part standard Portland cement with three parts of clean dry sand. Also mix two parts of hydro-proof liquid asphalt into which has been stirred one-fifth its volume of clean water. The two mixtures are thoroughly stirred together to the consistency of a stiff troweling mortar and applied to the ruts, broken, or pitted places in the floor. This formula is varied according to the material to be resurfaced and the weight of the traffic it serves.

Rubber in Fine Shoemaking

A process of European origin, known as the Fresko System, has been developed for the manufacture of fine shoes. Its success depends on the use of a group of rubber solutions by means of which plies of leather and leather, rubber and rubber, or leather and rubber can be united inseparably. The rubber solutions used in this process have a penetrating effect on the roughened leather and rubber surfaces and the union is effected by a variety of cold vulcanization.

As applied in fine shoemaking, the process involves grooving the sole with a grooving or surface-roughening machine, and painting the sole with two coats of one solution, allowing the first coat to dry thoroughly before applying the second. A second solution is then applied to the insole with the shoe on the last. When all coats of both solutions are dry, a third solution is applied, allowed to stand for a short time, and then pressure is applied to the sole and insole. This may be done with a hammer or with any one of the many machines now in ordinary shoe-factory use, such as a sole leveler. The finishing process then goes forward in the usual way of manufacturing.

The same or similar solutions can be used in repair work on soles and heels, and can be used on fabric footwear, or with rubber and composition soles, as well as with leather.

In addition to the use of these solutions in shoemaking, they are applicable in the rubber factory for vulcanization of special work, repairs, etc.

Rubber Mounting for Motors

THE use of rubber for absorbing shocks and vibrations has been widely introduced in the automotive industries. Its value for this purpose is strikingly evident in its application in the spring shackles of buses and trucks. From this early application the use of rubber to eliminate vibrations and contribute to the quiet operation of machinery in general, is rapidly extending. An example is its use as a mounting in motor units designed for the refrigeration industry.

For this industry single phase motors are required, complying with the condition that they be ultra-quiet in starting, running, and stopping, besides meeting numerous other important specifications of economy and efficiency. The same type of motor is essential for other motor-driven appliances intended for homes, schools, churches, and other places where noise of any sort is objectionable, hence the growing demand for rubber-mounted "refrigeration motors" for oil burners, dish washers, ironers, unit heaters, ventilators, etc.

In one of the leading motors for these services, the rotor is supported at 4 points on rubber bushings backed up with steel on all surfaces, thus holding the motor securely against forces acting in any direction. The saddle base of the motor is completely insulated from the motor proper by the rubber bushings, which are soft enough to absorb the small amount of mechanical vibration remaining even in the most carefully designed motor; yet are firm enough to keep the entire construction sufficiently rigid for satisfactory performance.—Wagner Electric Corp., St. Louis, Mo.

Ship Fenkers Made From Discarded Tires

Another use for discarded casings has been found in the making of all-rubber built-up fenders for river and sea-going vessels, and to replace the padded, plaited-rope fenders or the dangling logs which have so long been used to protect the bulwarks of big boats when docking or of towboats maneuvering other vessels. They are made in lengths desired for bows, sides, and sterns.

Fenders for bows are nearly V-shaped with two pendant chains with rings on the top side, and usually with a single chain or "bob-stay" on the under side. The cores are of heavy chain or of galvanized flexible steel rope, doubled. The center pudden pad is made in any thickness. Stern fenders are nearly semi-circular, 2 to 4 inches wider than the ship guards, with chain or flexible steel rope cores, tapered

Bow and Side Fenders

to narrow ends or of uniform diameter as the pudden. Side fenders are built up of tire-tread layers, each layer being bound with heavy galvanized seizing wire coated with metallic marine paint. In all types the tire tread, cut either crosswise or lengthwise, is depended upon to withstand all contacts and resulting abrasion, which latter is said to be slight.

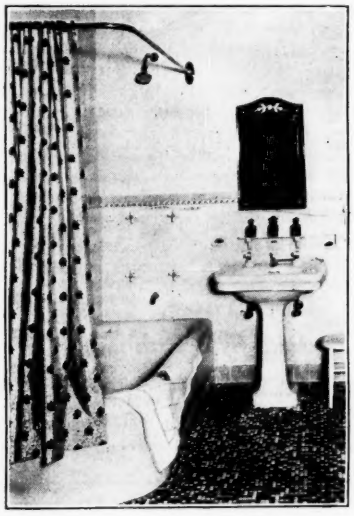
It is claimed that such resilient fenders absorb 75 per cent more shock than those of rope; do not cut, tear, or become hard or matted; cannot take up over 5 per cent of water or hold an ice-coating; in stemming or nosing a vessel into a berth or other position, they stay put and afford a strong non-slip grip; will outlast the best rope fenders; and will save vessels from damage.

The fenders, for which patents have been sought, are made by the Durable Mat Co., Seattle, Wash.

Golf Ball Change

The United States of America, has made a change. A larger and lighter ball, considered by the United States Golf Association since 1924, will replace the present standard and become official for play, starting, January 1, 1931. The new improved ball is 1.68 inches in diameter and 1.55 ounces in weight; while the present one is 1.62 inches in diameter and 1.62 ounces in weight.

New Goods and Specialties

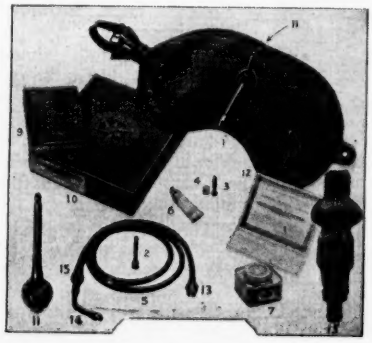


Curtain in Maize and Black

Attractive Shower Curtains

TODAY even the bathroom has fallen victim to the craze for color overwhelming the fashionable world and its followers. A pleasing accessory that will enhance the attractiveness of the modern bathroom is this dainty curtain for the shower, here illustrated. The color is maize, which sets off effectively the smart black designs. The inner side of the curtain is rubberized, single texture, with a lustrous finish obtained by the application of micaceous dust.

Another exquisite model is made in a delicate orchid and nile green silk plaid with a cross-weave step design. It will harmonize with the other pastel effects in the room. Rubberized fabrics in a variety of other color combinations, particularly the pretty pastel shades, are used in the manufacture of these shower curtains.—Para Rubber Co., 341 Halsey St., Newark, N. J.



Parts of the "J. B. L. Cascade"

Rubber Nursing Bottle Cover Has Handles

RUBBER covers have been provided for nursing bottles, but a novelty on the market is a rubber cover with handles that an infant likes to grasp and can hold comfortably. The new cover is known as "Cuddle Cup" and is made of pink-colored, tough, lightly-compounded rubber, and on one side are two vertical slits through which the milk level may be seen. Advantages claimed for it are that it saves bottles from breakage, keeps contents warm, is easily cleaned, and is also a comfort to teething babies. The cover is the invention of Mrs. Sally Knuteson, and is

"Cuddle Cup"

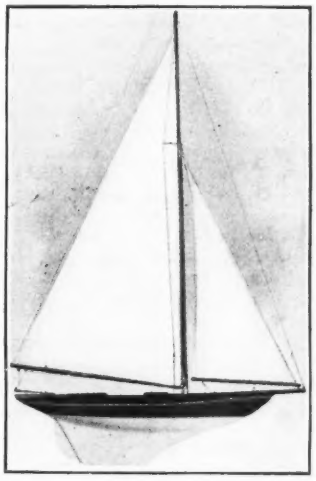
made for and marketed by the Cuddle Cup Co., 125 Rothdell Trail, Hollywood, Calif.

The "J. B. L. Cascade"

THE illustration herewith shows the improved "J. B. L. Cascade" internal bath, featuring the new morocco-finished display box, the McGee Automatic Shut-Off which preserves the tubing and is absolutely non-leakable, also the anatomically-shaped bag which permits the pressure of the body to force out all of the contents of the bag and conforms more closely to the body, enabling the user to reach the control-faucet handle more easily. Nearly all the parts of this cascade are made of rubber.—Tyrrell's Hygienic Institute, Inc., 152 W. 65th St., New York, N. Y.

Toy Yacht Has Rubber Hull

"OSPREY" is the last word in scale model racing yachts. The hull is the deep-keel type designed for fast sailing in any weather. The graceful design of her hull and her well-balanced rig make



"Osprey"

"Osprey" a beautiful and attractive model yacht, a toy yacht that is more than just a toy. The hull, shaped in steel molds, is of hard vulcanized rubber. The boat is spreader, automatic steering gear, and the Boucher patented sail-shifting device by which she may be balanced to hold her course. The dimensions of "Osprey" are: length overall, 36 inches; beam, 7¾ inches; draft, 6⅞ inches; sail area, 800 square inches; and weight, 10½ pounds.—The H. E. Boucher Mfg. Co., 150 Lafayette St., New York, N. Y.

Improved Kitchen Utensil

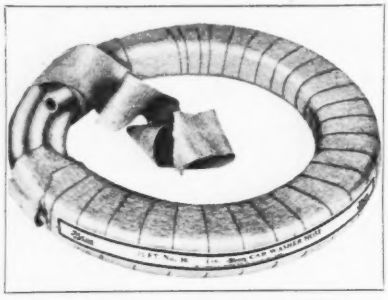
RUBBER is used in the kitchen also to good advantage. The latest accessory to appropriate the benefits of rubber is "Whiskette," a scouring and polishing brush here illustrated. Each "Whiskette" is made of specially-tempered steel-wool, equipped with nickel-plated bronze fittings,

"Whiskette"

combed out, chemically treated to resist rust, made parallel, and stitched under great pressure. Since handling steel-wool is disagreeable and sometimes painful, a thick, soft rubber holder is used, which will save the housewife's hands. The steel-wool brush is pulled from the holder after each service until it is worn out. But the rubber enjoys a much longer life; so the holder may be utilized with many refills.—R. G. Jolly, 3240 N. 13th St., Philadelphia, Pa.

Car Washer Hose
A Manhattan Specialty

THE Manhattan Rubber Mfg. Co., Passaic, N. J., maker of Hycoe Automotive Products, introduces a new item in Hycoe Car Washer Hose. It is a heavy, rugged hose, made in ½-inch, 5-ply size and to withstand the high pressures of modern car washer machinery. Hycoe Car Washer Hose resists hot water and car



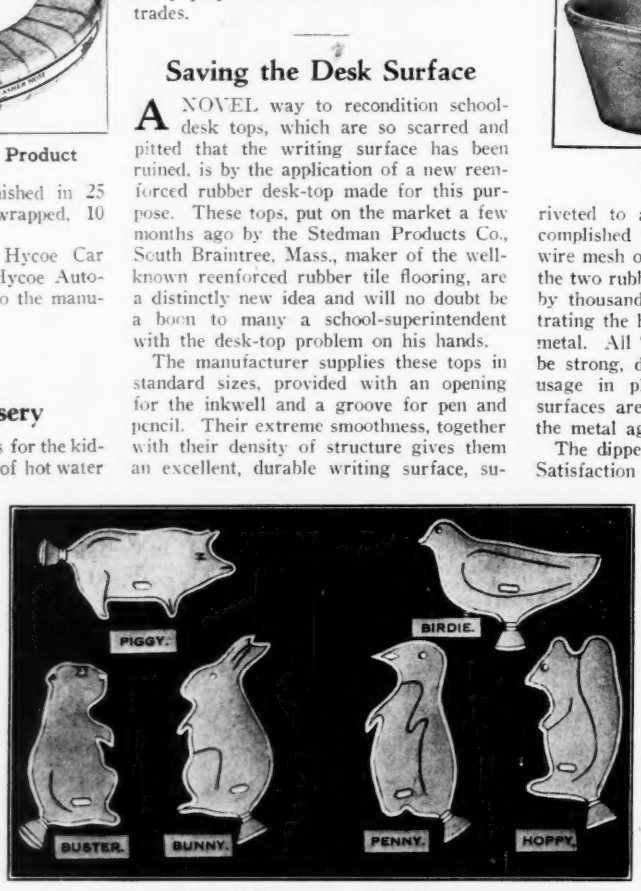
New Hycoe Automotive Product

washing solutions. It is furnished in 25 and 50-foot lengths, paper wrapped, 10 lengths per bale.

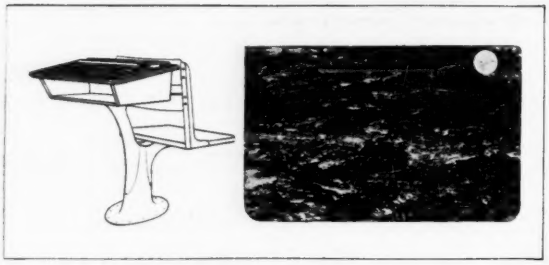
For information regarding Hycoe Car Washer Hose or any of the Hycoe Automotive Products, write direct to the manufacturer.

Hot Water Bottles
Especially for the Nursery

PLAYMATES and bedmates for the kiddies now come in the guise of hot water bottles. These cunning nursery accessories, here illustrated, will enchant the youngsters, while fulfilling their important function. These hot water bottles are hand made of the finest quality para rubber. They are fully tested and guaranteed. The periphery is of a different color, and other markings in that same color represent features or limbs. There are six models, as shown in the illustration, all fashioned after the popular nursery figures.—Campbell, Achnach & Co., Ltd., Thistle Rubber Works, Wallace St., Glasgow, C. 5, Scotland.



Kiddies' Playmates and Bedmates



Stedman Rubber School-Desk Top

Rubber Cement

RELIANCE RUBBERWARE, LTD., Formosa St., Paddington, London, W. 9, England, produces a new process, self-vulcanizing, two-solution, non-inflammable rubber cement which makes a durable vulcanized joint. By means of the quick accelerators employed, the two solutions combine and dry out rapidly at ordinary room temperature, giving an indestructible joint that will not deteriorate. This two-solution may be used on all rubber products including motor and cycle tubes or covers, footwear, gloves, hot water bottles, and motor car hoods and covers.

Another product is Reliance Rubber Non-flam Solution which effects quick-drying repairs in taping seams of waterproof garments and mending tears. It is specially prepared for the rubber and kindred trades.

Saving the Desk Surface

A NOVEL way to recondition school-desk tops, which are so scarred and pitted that the writing surface has been ruined, is by the application of a new reenforced rubber desk-top made for this purpose. These tops, put on the market a few months ago by the Stedman Products Co., South Braintree, Mass., maker of the well-known reenforced rubber tile flooring, are a distinctly new idea and will no doubt be a boon to many a school-superintendent with the desk-top problem on his hands.

The manufacturer supplies these tops in standard sizes, provided with an opening for the inkwell and a groove for pen and pencil. Their extreme smoothness, together with their density of structure gives them an excellent, durable writing surface, superior even to the customary wooden top.

One feature that has been remarked on by a state school-superintendent, who recently examined this top, is its anti-glare finish, which assists materially in the reduction of eye fatigue. Even under the brightest illumination, these desk tops will not reflect light rays into the pupils' eyes. The color that lends itself so well to these tops is known as Verde Antique, which has black as its basic color with cream and sea green for veinings.

A special method of cementing makes the installation of these tops simple and rapid. In a few hours' time a classroom of desks can be completely recovered and cemented permanently into place.

A Metal Dipper
Covered with Rubber

THIS dipper, here illustrated, is a typical "Laymesh" product. The word "Laymesh" refers to a new type of construction by which rubber is actually

"Laymesh" Dipper

riveted to a metal surface. This is accomplished by covering, on both sides, a wire mesh or perforated metal with rubber, the two rubber surfaces being held together by thousands of rubber rivets, each penetrating the holes in the mesh or perforated metal. All "Laymesh" products are said to be strong, durable, and suitable for rough usage in plant operations where rubber surfaces are necessary in order to protect the metal against chemical action.

The dipper will not rust, chip, or break. Satisfaction is guaranteed, or money will be refunded. The dipper is obtainable from the distributer in four sizes with a capacity of 1½, 2, 2½, and 3 quarts, respectively.

Other "Laymesh" items are: pipe, which may be obtained in standard sizes or made to order; elbows; tees; containers, which may be made in the form of milk pails, jugs, etc., where the outlet is smaller than the base; pails made in 10, 12, and 14-quart capacities; and trays of standard size, suitable for general photographic work.—Carman & Co., Inc., 629 W. 27th St., New York, N. Y.

Legal

Patent Decisions

EX PARTE HAROLD A. DENMIRE. APPEAL NO. 479, BOARD OF APPEALS OF THE PATENT OFFICE.

Patent No. 1,715,644 was issued June 4, 1929, to Harold A. Denmire for Tire Making Machines, on application No. 690,381, filed February 4, 1924.

This is an appeal from the final rejection of claims 10 to 17, inclusive. The decision of the examiner is reversed.

EX PARTE RAY P. DINSMORE. APPEAL NO. 1,035, BOARD OF APPEALS OF THE PATENT OFFICE.

Patent No. 1,712,333 was issued May 7, 1929, to Ray P. Dinsmore for a method of compounding caoutchouc, on application No. 751,684, filed November 22, 1924.

This is an appeal from the action of the examiner finally rejecting claims 1 to 5, inclusive, 10, 11, and 12. The board concluded that the new claims 13, 14, 15, and 16 may be entered and allowed if claim 13 is amended as suggested.

Patent Suits

BATTERIES, No. 1,095,722, B. Ford, secondary or storage batteries, D. C. Mass., Doc. E 2020, The Electric Storage Battery Co. v. Hood Rubber Co. Decree for plaintiff Dec. 19, 1925.—*Official Gazette*, Vol. 381, p. 747.

HEEL, re. 14,049, J. G. Tufford, resilient heel, D. C. Mass., Doc. E 1008, The I. T. S. Rubber Co. v. Essex Rubber Co. Decree affirmed by mandate of Supreme Court of the United States. Jan. 27, 1927.—*Official Gazette*, Vol. 381, p. 748.

ACCELERATOR, No. 1,477,805, C. W. Bedford, accelerator for vulcanization of caoutchouc substance; 1,591,440, Sebrell & Bedford, art of manufacturing thiazols; 1,631,871, W. J. Kelly, process of manufacturing mercapto-benzo-thiazole, filed Mar. 14, 1929, D. C., N. D. Ohio, E. Div., Doc. 2933, The Goodyear Tire & Rubber Co. v. The Rubber Service Laboratories Co.—*Official Gazette*, Vol. 381, p. 992.

BELT, No. 1,494,075, L. Murray, belt and process of making; 1,610,942, J. R. Gammeter, endless belt and method of making; 1,657,300, H. W. Delzell, reenforced side driving belt, filed Mar. 7, 1929, D. C. Minn. (Minneapolis), Doc. E 1218, Durke Atwood Co. et al. v. The Miller Rubber Co.—*Official Gazette*, Vol. 381, p. 992.

Treasury Decisions

RAINCOATS, No. 8306. Protest 298693-G of Kaufmann Department Stores, Inc. (Pittsburgh). Raincoats. Raincoats classified as wearing apparel in chief value of cotton at 35 per cent ad valorem under paragraph 919, tariff act of 1922, are claimed dutiable as manufactures in chief value of rubber at 25 per cent under paragraph 1439.

Opinion by J. Weller. On analysis it was shown that cotton is the component material of chief value in the articles in question. They were therefore held properly classified under paragraph 919.—*Treasury Decisions*, Vol. 55, No. 14, p. 33.

BALLS, No. 8484. Protests 281228-G, etc., of George Borgfeldt & Co. (New York). Rubber Balls—Artificial Christmas Trees. In these protests certain rubber balls are claimed dutiable at 30 per cent ad valorem under paragraph 1402, tariff act of 1922, and artificial Christmas trees at 33⅓ per cent under paragraph 410.

Opinion by J. McClelland. In accordance with stipulation of counsel the rubber balls were held dutiable under paragraph 1402, United States v. Woolworth (16 Ct. Cust. Appls.—, T. D. 43136) followed, and the artificial Christmas trees at 33⅓ per cent under paragraph 410, Abstract 6205 followed.—*Treasury Decisions*, Vol. 55, No. 18, p. 16.

GLOVES, No. 8548. Protest 314500-G/76910 of Hensel, Bruckmann & Lorbacher, Inc. (Chicago). X-ray Gloves. X-ray gloves classified as leather chief value at 50 per cent ad valorem under paragraph 1433, tariff act of 1922, are claimed dutiable as india rubber chief value at 25 per cent under paragraph 1439.

Opinion by J. McClelland. On the authority of Abstract 8199 the X-ray gloves in question were held dutiable as manufactures of india rubber at 25 per cent under paragraph 1439.—*Treasury Decisions*, Vol. 55, No. 19, p. 22.

BALLS, No. 8728. Protests 327791-G, etc., of Geo. Borgfeldt & Co. et al. (New York, etc.). These protests relate to merchandise classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, and claimed dutiable at various lower rates.

Opinion by J. Sullivan. In accordance with stipulations of counsel the articles in question were held dutiable as follows: Rubber balls at 30 per cent under paragraph 1402, United States v. Woolworth (16 Ct. Cust. Appls. 421, T. D. 43136). *Treasury Decisions*. Vol. 55, No. 22, pp. 24-25.

SPONGES, No. 8769. Protest 297068-G of Fourman Bros. & Co., Inc. (New York). Merchandise which was invoiced as rubber sponges was reported by the appraiser to consist of small articles of china painted or decorated to represent a head, with a cap, having a hole in the center into which is inserted a circular piece of yellow rubber sponge representing a grotesque face with two pieces of black rubber for eyes and a piece of red rubber for the protruding tongue. The articles were treated as entireties and duty assessed at 70 per cent ad valorem under paragraph 212, tariff act of 1922. Claims are made under paragraphs 1447 and 1439.

Opinion by J. Young. It was found that the merchandise in question is composed in chief value of rubber. The claim at 25 per cent under paragraph 1439 was therefore sustained. *Treasury Decisions*. Vol. 55, No. 23, p. 26.

BOOTS, No. 8793. Protest 280627-G/76022 of Carson, Pirie, Scott & Co. (Chicago). Merchandise returned by the appraiser as rubber boots lined with cotton, the upper ornamented with fur, classified at 35 per cent ad valorem under paragraph 1405, tariff act of 1922, is claimed dutiable at 25 per cent under paragraph 1439 as manufactures in chief value of rubber.

Opinion by J. Weller. No other evidence was introduced except a sample of the merchandise. As there was nothing to show the material of chief value in the boots in question the protest was overruled. *Treasury Decisions*. Vol. 55, No. 23, p. 30.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

NUMBER	COMMODITY	CITY AND COUNTRY	PURCHASE OR AGENCY
38,559	Mats	Montreal, Canada	Both
38,560	Overshoes	Zurich, Switzerland	Agency
38,566	Belting	Paris, France	Agency
38,571	Waste rubber	Hamburg, Germany	Purchase
38,582	Tires	Barranquilla, Colombia	Agency
38,587	Tires	Cali, Colombia	Agency
38,627	Belting	Hamburg, Germany	Agency
38,629	Canvas shoes	Santiago, Chile	Agency
38,630	Sport goods	Nelson, Canada	Purchase
38,634	Office supplies	Brisbane, Australia	Purchase
38,739	Bathing caps	Bombay, India	Agency
38,740	Rubber cloth	Oslo, Norway	Agency
38,745	Transparent gutta-percha tape	Hamburg, Germany	Purchase
38,795	Bathing caps, shoes and toys	Vienna, Austria	Agency
38,796	Floor coverings and toy animals	Vienna, Austria	Agency
38,797	Printing sheets	Berlin, Germany	Purchase
38,798	Floorings	Cape Town, S. A.	Purchase
38,804	Mats	Montreal, Canada	Both
38,875	Tires	Teneriffe, Canary Islands	Agency
38,890	Footwear	Vienna, Austria	Agency
38,931	Tires	Durazno, Uruguay	Both
38,939	Boots	Copenhagen, Denmark	Purchase
38,943	Rubber goods	Barcelona, Spain	Agency
38,945	Footwear	Mulhouse, France	Purchase
39,013	Unmarked heels and soles	Toronto, Canada	Purchase
39,014	Canvas shoes, belting, baby goods, pure gum and rubberized fabric and toys	Nantes, France	Agency
39,015	Footwear	Sofia, Bulgaria	Agency
39,016	Balloons	Oslo, Norway	Agency
39,027	Surgical goods	Copenhagen, Denmark	Agency

Improves Turpentine for Compounding

Turpentine may be polymerized to the general formula of $C_{10}H_{16}$ and its usefulness enhanced for rubber compounding by pouring sulphuric acid into the oil, stirring, and cooling. The first portion of the acid is diluted, the addition is continued until one part of acid and four of oil ratio has been reached. The mixture is then heated. If desired, potassium dichromate may be added to the acid.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
2329	British Exports of Footwear, March and First Quarter of 1929.
2332	British Exports of Automobile Casings, March and First Quarter of 1929.
2333	Review of Syrian Tire Trade for 1928.
2334	Polish Tire Report for 1928.
2335	French Tire Exports, First Quarter of 1929.
2336	French Footwear Exports, March and First Quarter of 1929.
2342	United States Exports of Rubber, Leather, and Cotton Belting, During 1928.
2350	German Tire Exports, First Quarter 1929.
2351	Belgian Tire Exports, First Quarter 1929.
2354	Japanese Exports of Toys.
2355	British Exports of Footwear, April 1929.
2356	British Exports of Automobile Casings, April 1929.

Financial News

Lee Tire & Rubber Corp.

Lee Rubber & Tire Corp., Conshohocken, Pa., and subsidiaries report for the six months ended April 30, 1929, a net profit of $227,270 after depreciation, interest, etc., equivalent to 76 cents a share earned on 300,000 no-par shares of stock. This compares with $91,148 after depreciation, interest, reserve for rebates, etc., or 31 cents a share on 293,261 shares in the same period of the previous year.

New York Rubber Corp.

Sales of the New York Rubber Corp., Beacon, N. Y., for the first quarter of 1929 show an increase of 50 per cent over the corresponding period of 1928; this increase being partly due to a number of high-grade specialties which have been developed and put on the market during the past year. Standard-line items as well as Airubber sales have also shown substantial increases over previous periods. The outlook for a greater volume of sales is anticipated by the company during the balance of 1929.

At the yearly stockholders' meeting held on May 21, the following officers were reelected: Morgan W. Jopling, president; L. D. Bigelow, vice president and general manager; Donald Hyde, treasurer; and P. D. Ash, secretary.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Aetna	Com.	$0.25 q.	July 1	June 15
Aetna	Pfd.	$1.75 q.	July 1	June 15
Akron R. Rec.	Pfd.	$2.00 q.	July 1	June 20
Baldwin	Class A	$0.37½ q.	June 30	June 20
Cambridge	Pfd.	$1.75 q.	July 1	June 25
Dayton	Cl. A Com.	$1.75 s. a.	July 10	June 27
Dayton	Pr. Pfd.	$3.50 s. a.	July 10	June 27
Dayton	Pfd.	$3.50 s. a.	July 10	June 27
Dominion	Pfd.	$1.75 q.	June 29	June 25
Dunlop T. & R. Goods	7% Pfd	$1.75 q.	July 2	.....
Faultless	Com.	$0.50 q.	July 1	June 15
Faultless	Pfd.	$1.75 q.	July 1	June 15
Firestone	.....	$2.00 q.	July 20	July 10
Firestone	6% Pfd.	$1.50 q.	July 15	July 1
General	Pfd.	$1.50 q.	June 30	June 20
General	6% Cum. Pfd.	$1.50 q.	June 30	June 20
Goodrich	Pfd.	$1.75 q.	July 1	June 10
Goodyear	1st Pfd.	$1.75 q.	July 1	June 1
Goodyear	Com.	$1.25 in.	Aug. 1	July 1
Goodyear (Calif.)	Pfd.	$1.75 q.	July 1	.....
Goodyear (Canada)	Com.	$1.25 q.	July 2	June 15
Goodyear (Canada)	Pfd.	$1.75 q.	July 2	June 15
Mohawk	Pfd.	$1.75 q.	July 1	June 15
National Rubber Machy.	Com.	$0.50 q.	July 15	July 1
Phila. Insulated Wire	Pfd.	$2.50 s. a.	Aug. 1	July 15
Plymouth	Com.	$0.50 q.	June 15	June 12
Rubber Service	Pfd.	2% q.	July 1	June 20
Samson	Com.	$0.31¼ in.	Aug. 1	July 15
Seiberling	Pfd.	2% q.	July 1	June 20
U. S. Rubber Rec.	Cl. A Pfd.	$0.37½ q.	July 1	June 20
U. S. Rubber Rec.	Pr. Pfd.	$0.50 q.	July 1	June 20

Editor's Book Table

New Publications

"Banbury Mixer," Bulletin No. 124, issued by the Farrel-Birmingham Co., Inc., Derby, Conn., illustrates and describes various models of the Banbury mixer. Paper, 8½ by 11 inches, 20 pages.

"Houghton on Industrial Plant Lubrication." A neatly printed and illustrated pamphlet of 56 pages is issued by E. F. Houghton & Co., Third American and Somerset Sts., Philadelphia, Pa. In this short treatise the application of the theory of lubrication is given and its application to industrial machinery, including rubber, is discussed with special reference to the advantages of employing absorbed oils for this purpose.

"Tubing, Rubber;" "Hose, Water and Wash Deck;" and **"Hose, Suction, Water (Smooth Bore)"** are United States Government Master Specifications 39c, 48c, and 50b, respectively. These eight-page paper pamphlets are issued by the U. S. Department of Commerce, Bureau of Standards, Washington, D. C., in accordance with the revision promulgated by the Federal Specifications Board on December 8, 1928 and published by the Bureau of Standards. The contents deal with general specifications, grades, material and workmanship, general requirements, detail requirements, method of test and analysis or inspection and sampling, packing and marking of shipments, and notes.

"Facts and Figures of the Automobile Industry," 1929 edition, is issued by the National Automobile Chamber of Commerce, 366 Madison Avenue, New York, N. Y. As usual this booklet contains much interesting data regarding the automobile industry. The information is supplemented by tables, charts, and graphs. Paper, 5⅞ by 8⅝ inches. 96 pages.

"Tire Table of Balloon Tires and the Cars that Use Them." A circular issued by National Rubber Machinery Co., Akron, O., giving sizes of tires used in 1925-26-27-28-29, and the make of car using them. This is a valuable tabulation.

"Rubber Research Scheme (Ceylon)." This is the seventh report of the Executive Committee to members and includes proceedings of the year 1928, accounts of the various committee activities, reports by the chemist, physiological botanist, mycologist, and that of the London Advisory Committee, and concludes with list of members, subscribers, and financial report.

Solvents Institute Formed by Seven Manufacturers

The formation of Solvents Institute, Inc., has been completed recently by seven organizing concerns, as follows: The American Solvents & Chemical Corp., E. I. du Pont de Nemours & Co., the Franco-American Chemical Co., the Kessler Chemical Co., the Merrimac Chemical Co., the U. S. Industrial Chemical Co., and the Van Schaack Bros. Chemical Works.

The object of the Institute is to promote better business relations among manufacturers of solvents throughout the United States by maintaining the industry upon a high ethical basis to the end that such industry will command the confidence of the trade and public respect.

Robert T. Baldwin will be in charge of the institute offices at 50 E. 41st St., New York, N. Y.

Rubber-Proofed Silk Cords

Waterproof silk cords are made by degumming silk threads in a solution of silk and gelatin, drying and twisting them, and coating them with a solution of chromium salts. The cord is then steamed at 110-115° C., dried, and vulcanized with rubber under pressure.

The Rubber Industry in America

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The India Machine & Rubber Mold Co. Control of this company has been acquired by R. Dent and C. Blake McDowell. R. Dent McDowell remains as president, with M. D. Tremelin, vice president, and C. Blake McDowell, secretary. The company manufactures the India collapsible tire building core, chuck, and drum, which practically every tire building company in the world has adopted as standard equipment. The company has just brought out a new All-Steel Core for large-sized tires, the construction of which is much lighter than any previously made. The factory is located on Annadale Ave., Akron, O.

Fremont Tool & Die Co., 434-436 N. Wood St., Fremont, O., specializes in the manufacture of cutting dies for the rubber-shoe industry. A large addition to its factory was recently completed to enable the company by working day and night to keep pace with its many orders. All goods are manufactured to order.

The Mason Tire & Rubber Corp., according to Henry Garrison Keller, president, has sold its textile plant at Kent, O., to a prominent Akron rubber company. In his statement Mr. Keller declared that the sale of the fabric plant would help to stabilize the company, as it would be possible to purchase textiles cheaper than they could be manufactured on a part-time basis. It was not stated which rubber concern bought the Mason plant, but according to common belief, The B. F. Goodrich Co. is the purchaser.

Fred M. Harpham, formerly a director in The Goodyear Tire & Rubber Co., Akron, O., and now a director of the Goodyear Zeppelin Corp., on June 7 was named to take over part of the work of Clifford F. Stone, vice president, whose resignation was announced on June 6. Mr. Stone resigned to become affiliated with an eastern banking concern.

The Great Lakes Rubber Co., Cleveland, O., according to its general manager, Mr. Mackey, is forced to seek new quarters because the plant that it has been occupying, belonging to the American Steel & Wire Co., is to be torn down entirely very soon. The rubber company is moving to another location, a building owned by the Standard Oil Co. at the corner of Broadway and Jefferson Ave., where production will be in full force as soon as possible.

The Aetna Rubber Co. has announced that necessary alterations and changes are under way in its Ashtabula plant to provide for the transfer of operations now at Cleveland. The company intends to abandon completely its Cleveland plant as soon as the various divisions can be set up at Ashtabula. Transfer of executive offices to Ashtabula are effective as of July 1. Branch sales offices are located in Cleveland and Detroit.

Monsanto Chemical Works Merges with The Rubber Service Laboratories

Announcement has recently been made of a merger through an exchange of stock of The Rubber Service Laboratories Co., Akron, O., and its subsidiary, The Elko Chemical Co., with the Monsanto Chemical Works, St. Louis, Mo.

The Rubber Service Laboratories Co. was established in 1922, pioneering in the relatively new field of rubber accelerators. The company has rapidly expanded and the number of rubber chemicals it now manufactures approximate twenty. This broad scope permits it to serve every requirement of the rubber manufacturer.

Through its Elko subsidiary, which was established a few years ago, The Rubber Service Laboratories Co. manufactures a number of important organic chemicals for the pharmaceutical and dyestuff fields, as well as for general industrial use.

The head office of this company is in Akron and the manufacturing plant is situated on a plot of approximately thirty-eight acres in Nitro, W. Va. The gross assets total one million five hundred thousand dollars. Two hundred and fifty employes are engaged in the business. The sales for the first quarter of 1929 are running at the annual rate of two million dollars, and both sales and profits are substantially in excess of the first quarter of 1928.

Marketing of the strictly organic chemical products will be assumed by Monsanto Chemical Works, but the rubber chemicals will be handled as heretofore through The Rubber Service Laboratories Co., which name will be retained.

Its officers are C. N. Hand, president; E. J. Smail, Jr., vice-president and sales manager; and C. O. North, secretary and treasurer.

The Akron Section of the **American Chemical Society** held its last spring meeting on May 25 at Hotel Glencrest on Stafford Lake. Dr. H. E. Howe, editor of *Industrial and Engineering Chemistry,* addressed the meeting on "Chemistry in Industry." Dancing followed the meeting.

The following officers were elected for the coming year: chairman, Dr. S. B. Sebrell; vice chairman, A. B. Merrill; secretary, Dr. W. F. Zimmerli; treasurer, H. R. Thies; councilors, W. W. Vogt, H. F. Palmer, and Dr. W. N. Jones.

The Barr Rubber Products Co., Sandusky, O., has announced that it has taken over The Par Rubber Co., Bowling Green, O. All communications should be addressed to the Barr factory in Sandusky.

The Municipal Airport, Akron, O., after nearly a year's delay because of red tape, has been made available to aviation companies to start erecting airplane hangars.

The first to build, Air Services, Inc., plans a $60,000 hangar. The company has been given the first site in the first zone. The sites have been divided into three zones.

The B. F. Goodrich Co. has been given the second site in zone two. The company now owns one airplane and, according to reports, may buy several more.

Firestone Tire & Rubber Co. has applied for a site, but has not announced building plans. The company owns a Ford transport ship.

The Fidelity Tire & Rubber Co., Warren, O., has purchased the American Rubber & Tire Co. of Akron. The Warren company will take over the manufacturing and selling end of the business, which means that the Akron plant will be closed, at least temporarily. The American Akron, American Ace, and Wearever brands of tires and tubes will be continued by the Warren company, it was reported.

Officers of the Akron company will have no active interest in the Fidelity company, F. C. Snyder of the American company declared. He did not announce complete details of the transaction.

The Fidelity is capitalized at about $750,000 and its stock was recently listed on the Chicago Stock Exchange. Its Warren plants have a daily capacity of about 1,500 tires.

The Premier Rubber Mfg. Co., Dayton, O., has announced that J. L. Fitzgerald has joined its staff as chief chemist in charge of the new, recently-installed laboratory.

E. Bonazzi, formerly assistant manager of the export department of The Miller Rubber Co., Akron, O., has been made manager, succeeding C. E. Wagner, who recently resigned. Mr. Bonazzi has had fourteen years' experience in rubber-export work—nine years of this period with Miller. In this past connection, his time has been given to

E. Bonazzi

sales promotion in practically every country in the world. He has had personal charge of the development of rubber sundries sales. During his work in organization and sales promotion, he has seen the business of The Miller Rubber Co. increase until the company is now said to be the largest exporter of bathing wear, surgical goods, and other rubber sundries.

The Carrollton Tire & Rubber Co., Carrollton, O., recently was organized to manufacture and deal generally in tires, tubes, and other rubber products. It has a capitalization of 1,000 shares of which 500 are preferred and 500 are common with no par value.

The B. F. Goodrich Rubber Co. will start at once construction on a new building at the Akron plant, it was announced by President James D. Tew following the awarding of the contract to a local construction company. The old power-plant building, one of the oldest of the sixty-five buildings at the Akron plant, has been razed for the new structure. A foundation for eight stories will be laid although only three stories will be completed at this time. The building and equipment will total $650,000, Mr. Tew said. The new structure will house a battery of huge mixing machines for compounding rubber. This is part of a $5,000,000 expansion program this year for the Akron plant.

The Goodyear-Zeppelin Corp., Akron, O., reports that construction of its huge dock for the navy dirigibles has been progressing very favorably during the past few months. The 360-ton middle section of the main arch was recently lifted into place and with the completion of this span, work is expected to progress at the rate of one section every three weeks. Proceeding at this rate, the south half of the hangar will be complete about August 15, at which time erection of the first dirigible will begin.

Accessory Sales Manager for Goodyear

On March 1, 1929 The Goodyear Tire & Rubber Co., Akron, O., appointed Martin Kagey Moore accessory sales manager. He is well known both by men in the trade and the Goodyear sales organization because of his splendid work all over the country in accessory sales, and his promotion is another indication of the appreciation of meritorious efforts by the Goodyear company.

Mr. Moore was born August 3, 1892, in Ashland, O., where he attended the elementary and high schools. He took courses also at Ohio State University and Ashland College.

He began his business career in the wholesale and retail grocery trade with his father in Ashland during 1914-1916. He was attracted to the rubber industry and in 1916 entered the efficiency department, then the stock and order department of the Faultless Rubber Co., Ashland, where he remained until 1917. On May 2, 1918 he joined the merchandise distribution department of the Goodyear company. He became assistant manager in January, 1921. Six years later he was transferred to the sundries sales department and continued there until his recent advancement.

Mr. Moore is a Mason and an Elk. He is also a member of the Sigmi Chi fraternity. His residence is at 123 N. Portage Path, Akron, O.

Martin K. Moore

Firestone Activities

The Firestone Tire & Rubber Co., Akron, O., has entered the automobile battery manufacturing field and has started construction of a $500,000 plant. The first unit of the battery plant will be two stories, 50 by 100 feet, and will be completed early in July. The plant will have a capacity of 2,000 batteries per day and will employ 1,000 men. The batteries are to be manufactured complete in the new plant and will be distributed through the Firestone tire dealers' organization.

Employes of the Firestone Plant 2 held their tenth annual picnic at Lake Meyers on June 15. Two special trains carried some of the employes to Canton; while several hundred others went by auto. The program was launched with a baseball game at 10:30 o'clock and included field events.

Firestone Tire & Rubber Co. recently purchased a new twelve-passenger Ford tri-motored plane, priced at about $60,000. The plane will be used for company business between plants located in Akron, Bedford, Fall River, and Los Angeles, and for trips to the winter quarters of Harvey S. Firestone, president.

The General Tire & Rubber Co., Akron, O., will have an air fleet piloted by eight ex-army officers. The pilots are Lieutenants S. B. Yoder, R. K. Giovannoli, A. C. Lybarger, A. F. Kalberer, Murl Estes, H. J. Reid, J. B. Harvey, and H. E. Black. All pilots are veteran fliers and have received training at various flying fields. Several have had college training before entering the flying service and have later done advanced work in aeronautics. The fleet will soon start on a 50,000-mile air tour of the principal cities of the United States, Canada, Mexico, and Cuba.

The Sterling Rubber Products, 115 N. Jefferson St., Dayton, O., is a new corporation recently organized to conduct a general wholesale, industrial, and distributing business in mechanical rubber goods. The company has been appointed exclusive distributer of The B. F. Goodrich Co.'s mechanical rubber goods in the Dayton, O., territory. In addition, it will handle Goodrich footwear, and have exclusive distribution of the Belmont packings of the Belmont Packing & Rubber Co., Philadelphia, Pa., and the Eastman Mfg. Co.'s complete line of hose couplings and accessories for air and paint-spray equipment. William M. Hussey is president and Fred O. Seelig is secretary and treasurer.

Accelerator—R & H 397

R & H 397 is an economical, ultra accelerator, active at all temperatures above 100° C. It is a white, free flowing powder, non-hygroscopic, melting at about 100° C. In chemical composition, it belongs to the thiuram class and can be used wherever rapid or low temperature cures may be desired.

It is also a good auxiliary accelerator to be used in very small proportions when used in conjunction with other less rapid accelerators. It fully meets the requirements of low temperature cures.

NAIL HAD BEEN USED TO REPLACE MISSing cotter pin in side frame of hand elevating truck. Workman swinging empty truck around punctured left foot when struck by point of nail.—Rubber Section *News Letter*, National Safety Council.

EASTERN AND SOUTHERN

T. & S. C. White Co., "Bergenport Sulphur Works," has announced the removal of its office from 100 William St. to The New York Life Insurance Building, 51 Madison Ave., New York, N. Y. The new telephone number is Lexington 5920.

A reorganization of **The Kalbfleisch Corp.,** 200 Fifth Ave., with the **American Cyanamid Co.,** 535 Fifth Ave., both of New York, N. Y., through the consolidation of the assets of the two organizations, has been approved by their boards of directors, subject to confirmation by the stockholders. The Kalbfleisch Corp. will continue to operate as a separate organization, and no change in the management is contemplated.

American Cyanamid Co. is a large manufacturer of mining and industrial chemicals and fertilizer materials. The Kalbfleisch Corp. manufactures chemicals for paper making, textiles, and other purposes at its six plants in the United States and has ore mines and a plant in Dutch Guiana, South America.

R. D. Berry, purchasing agent of the Davol Rubber Co., Providence, R. I., was elected a vice president of the National Association of Purchasing Agents at the recent meeting held last month at the Hotel Statler, Buffalo, N. Y. Next year's convention will be held on June 16 to 19 at Chicago.

C. J. Doyle has been appointed manager of national and commercial account sales of the Dayton Rubber Mfg. Co., Dayton, O. His headquarters are in New York, N. Y. Mr. Doyle is well prepared for his responsible position, having served India Tire & Rubber Co. in a similar capacity and having also done special work for the Fisk Rubber Co. in the New York district.

Dayton Rubber Mfg. Co., Dayton, O., has announced that P. W. Horne is head of its new branch office at 211 First St., Charlotte, N. C. It will serve the Carolinas and neighboring states.

The New York Rubber Corp., Beacon, N. Y., has announced the appointment of H. N. Hubert as general sales manager. Mr. Hubert started in the mechanical rubber goods business thirty years ago with the Revere Rubber Co. as salesman, becoming branch manager at New Orleans in 1910. He remained in that capacity until the consolidation between the Revere Rubber Co. and the United States Rubber Co. in 1918, at which time he was appointed district sales manager of United States Rubber Co. in charge of all southern branches. Mr. Hubert has been connected with the New York Rubber Corp. in a general selling capacity for the past few years, and his appointment as general sales manager insures the management of a strong selling organization during the period to follow.

Abraham M. Sawyer, general manager of the Vulcanized Rubber Co., Morrisville, Pa., has resigned his position and will make an extended tour through European cities. Mr. Sawyer was connected with the rubber company for many years.

The Firestone Tire & Rubber Co., Akron, O., has purchased a corner business site in Buffalo, N. Y., which will be used for a new building to house the Buffalo branch of the company. Work will be started early this summer.

Brighton Mills, having moved their executive offices to Atlanta, Ga., to be near the mills, have opened a branch office at 1776 Broadway, New York, N. Y.; telephone, Circle 8263. C. S. Cook, the well-known rubber-fabric man formerly with Lawrence & Co., is in charge.

Rubber Manufacturers Association

The first meeting of the year of the Mechanical Goods Division, Rubber Manufacturers Association, was held at the Yale Club, New York, N. Y., on June 4. A. F. Townsend, president of the Manhattan Rubber Manufacturing Co., was elected chairman of the division, and W. Gussenhoven of the United States Rubber Co. was elected vice chairman.

The following were elected members of the executive committee of the division to serve for one year: J. A. Lambert, Acme Rubber Manufacturing Co.; A. C. Kingston, Boston Woven Hose & Rubber Co.; C. D. Garretson, Electric Hose & Rubber Co.; C. E. Cook, The B. F. Goodrich Co.; D. R. Burr, Goodyear Tire & Rubber Co.; A. B. Cornell, Hamilton Rubber Manufacturing Co.; F. E. Miller, Hewitt-Gutta Percha Rubber Corp.; and J. H. Cobb, New York Belting & Packing Co.

In accordance with the usual practice, a specification committee was appointed to serve during the ensuing year. Those appointed to the committee were: V. A. Cosler, The B. F. Goodrich Co.; H. E. Morse, Goodyear Tire & Rubber Co.; L. J. Howell, Hamilton Rubber Manufacturing Co.; J. M. Cranz, Hewitt-Gutta Percha Rubber Corp.; W. L. Sturtevant, Manhattan Rubber Manufacturing Co.; C. H. Zieme, Republic Rubber Corp.; and W. H. Cobb, United States Rubber Co.

The existing recommendation of the Mechanical Goods Division, that August 1 be adopted as the opening date for each garden hose season; and the existing "Memorandum of Sale for Garden Hose" were approved to apply to the 1929-1930 season.

A number of other subjects of current interest were discussed at some length and will be the subject of consideration by members pending future meetings.

The Rubber Flooring Divison held a meeting at the Yale Club, New York, N. Y., on May 28, at which only routine business was discussed.

DISTRICT SALES MANAGERS OF A. SCHRADER'S SON, INC., MEET FOR A CONFERENCE AT THE COMPANY'S PLANT IN BROOKLYN, N. Y. BACK ROW, LEFT TO RIGHT. A. E. FAY, MANAGER, CHICAGO BRANCH; P. L. MITCHELL, MANAGER, DEALERS' RELATIONS; M. H. TISNE, MANAGER, MANUFACTURERS ACCESSORIES SALES; W. R. CISNEY, MANAGER, EASTERN DISTRICT; A. G. UNDERWOOD, MANAGER, ACCESSORIES SALES; R. L. deBRAUWERE, GENERAL SALES MANAGER. FRONT ROW, LEFT TO RIGHT. S. A. HOWELL, MANAGER, TORONTO BRANCH; M. C. STEVENS, MANAGER, AKRON BRANCH; J. HOERGER, MANAGER, LOS ANGELES BRANCH; W. J. KIRKPATRICK, MANAGER, SERVICE DEPARTMENT; R. W. DAVIS, MANAGER, DETROIT OFFICE.

United States Rubber Co. Activities

United States Rubber Co., New York, N. Y., has made two changes in its tire department. H. N. Hawkes, formerly district manager of tire sales at Chicago, has been appointed manager of government and industrial tire sales at the New York office. Charles Samson has been appointed manager of accessories and repair materials.

On April 21 Arthur Surkamp completed ten years of service with the United States Rubber Co. Shortly after, he was appointed comptroller of that organization. He first served the company as employment manager, then as cashier and assistant treasurer of the United States Rubber Plantations, Inc. In 1923 he was made assistant to H. O. Cutter. In connection with that position he was assistant comptroller of the Plantations company, the General Rubber Co., and the United States Rubber Export Co., Ltd.

H. J. Haefelein has been appointed general sales manager of the footwear department, according to an announcement made recently by T. J. Needham, general manager of that department. Mr. Haefelein has never been connected with any other firm than the United States Rubber Co. He joined as a clerk in the footwear department in July, 1907, and was promoted several times, then into the sales department, finally reaching his present position.

Charles A. Blake, general sales manager of the sundries department, has announced the appointment of Paul Coste as manager, flooring department of the sundries department. Mr. Coste comes from The Goodyear Tire & Rubber Co., Akron, O., where he was promoted only a few months ago to the post of manager, flooring and tile sales.

Search for Oldest Tire Dealer

The company searched for the nation's oldest tire dealer. To date, the honor belongs to John Roth of the Roth Cadillac Co., Erie, Pa., who has been selling tires since 1892, when he stocked his first bicycle tires. He dropped that line in 1907. In 1898 he entered the automobile field with a car now obsolete and forgotten, and began to sell automobile tires. He has been distributer for Cadillac since 1903 and has been handling U. S. tires for thirty-seven years.

The second-oldest dealer appears to be Frank Shaw, 1421 Brown St., Philadelphia, Pa. He started with Hartford bicycle tires, made by a U. S. subsidiary, in 1894. He was the first in Philadelphia to sell and repair automobile tires and has been selling U. S. tires ever since.

New Manager of U. S. Rubber Flooring Department

The United States Rubber Co., New York, N. Y., needed a capable man for manager of its flooring department; so it chose Paul Coste. His broad experience makes him particularly suited for this position.

Mr. Coste did sales work in 1914-1915 for the Liquid Carbonic Co., Chicago, Ill. He was engaged in a similar capacity during 1916-1917 with the American Steel Foundries, also of Chicago. Then he answered his country's call to arms and served as an ensign in the United States Navy from 1917 to 1918. His sales work for The Goodyear Tire & Rubber Co., Akron, O., began in St. Louis in 1919. He was associated with the mechanical goods sales department at Houston, Tex., during 1919. The next year he was transferred to the European mechanical goods sales department in Brussels, Belgium. In 1922 he was sent to Dallas, Tex. Three years later, still with the same sales organization, he went to Cincinnati, where he remained until March, 1926, when he reported to Akron to take charge of flooring sales. He was appointed manager of the Goodyear flooring department in March, 1929. A few months later he resigned to accept his new position with the United States Rubber Co.

Paul Coste

Paul Coste was born February 10, 1893 in St. Louis, Mo. He specialized in mechanical engineering at Washington University of the same city. He was graduated in 1914. He is a member of the Phi Delta Theta fraternity.

Goodyear Personnel Changes

R. W. Powell of the Plant 1 Labor Bureau, The Goodyear Tire & Rubber Co., Inc., Akron, O., recently left that city for Atco, Ga., where he will have charge of employment and personnel work at the fabric mill purchased a short time ago by Goodyear from the American Textile Co.

C. A. Gray has been made assistant manager of the Atlanta branch. W. G. Starnes is manager.

Entering the service of Goodyear at Dallas in 1912 as a shipping and stockroom clerk, Gray's record has been one of successive progress, being interrupted only by two years of military service during the World War. While working as a stockroom clerk at the Dallas branch, he took a stenographic course to which position he was appointed. Later he was sent to San Antonio as adjuster and chief clerk.

Upon his return from the army in 1919, Gray started on general-line sales work at San Antonio. Then he was made service manager there. Being transferred back to Dallas, Gray served in various capacities until he was made manager of inside sales at Dallas. A year later he returned to San Antonio as general-line salesman and was engaged in that work until called back to Akron to receive special training for his new position.

H. F. McClure has been appointed branch manager at Jacksonville, Fla., to fill the vacancy caused by the death of C. W. Davis. McClure entered the service of Goodyear in 1916 at Louisville, Ky., where he was employed as a general-line salesman. Later he was made manager there. In 1919 he was transferred from Louisville to Indianapolis as manager of that branch office.

He became manager of automobile tire sales for the Indianapolis district. In the fall of 1920 he was transferred to Cincinnati as branch manager. Several months later McClure was made manager of automobile tire sales for the Central Division of the United States. Another branch which he managed was Knoxville. In 1926 he returned to Cincinnati where he again was in charge of the branch. At the time of his appointment to Jacksonville, McClure was at Akron engaged on work in the Southern Division.

Du Pont Products Exhibit

A window display of rubber products was a feature during the past month at the duPont Products Exhibit on the Boardwalk at Atlantic City, N. J. The display was designed to show the relative importance to the rubber industry of various chemical products such as accelerators, lithopone, and other heavy chemicals. A wide range of manufactured rubber articles was shown. These included tires for automobiles, airplanes, and bicycles; tire accessories; hard rubber specialties such as rubber pipes and fittings, dipping basket, bleaching dye and dye sticks used in the chemical industry; garden hose; tank balls, floats, washers, and other plumbing specialties; jar rubbers; raincoats; firemen and police coats; tile flooring; golf balls; footwear including wading boots, white boots, bootees, Keds, tennis shoes, women's pumps and gaytees; bathing accessories and novelties; and various and sundry articles sold by the drug trade. The articles shown were manufactured by the United States Rubber Co., New York, N. Y.

Belmont Packing & Rubber Co., Philadelphia, Pa., recently experienced a fire which destroyed its flax preparing and braiding equipment. The asbestos and rubber departments were intact, and production was not interrupted at any time in these sections. The company expects to be running its flax department as efficiently as ever very soon.

NEW ENGLAND

Skinner, Sherman & Esselen, Inc., research and development chemists, 246 Stuart St., Boston, Mass., are equipped to make standard chemical tests. The company handles also the testing of rubber products for strength, stretch, and the other usual physical tests together with the effect of aging by the bomb method. Herbert L. Sherman is treasurer.

The Fisk Tire Co., Inc., Chicopee Falls, Mass., made official announcement on June 6 of the appointment of Colonel C. M. Piper as its general sales manager, succeeding William Wield, who has resigned. Colonel Piper has been connected with Fisk in the capacity of assistant sales manager. He was formerly an executive of the Akron Headquarters' Sales Staff of The Goodyear Tire & Rubber Co., Akron, O., and has an extensive acquaintance in the tire business.

Frank C. Batton, formerly eastern zone manager, has been named assistant sales manager to fill the place of Colonel Piper.

The Tire Fabric Corp., Salmon Falls, N. H., celebrated its official opening on June 14. The mills were partially run in the evening with instructors to explain the various processes of manufacture. The program, which covered Friday evening and Saturday, included also dancing, a motor trip, golf, bridge, and dinner. Many leaders of the rubber and textile trade attended.

The factory had been idle since 1926 and its opening is a great boon to the community. The plant, to be run on a full-day capacity, now employs 325 hands but expects to increase to 450 within a few weeks.

Norwalk Tire & Rubber Co., Norwalk, Conn., recently elected new officers. These are John W. Whitehead, president, who succeeds William B. Miller; Louis P. Arnold, vice president; and W. F. Russell, secretary.

J. R. Rutherford, for the past seventeen years connected with the New England district headquarters of the B. F. Goodrich Rubber Co., and who was recently transferred to become manager of the branch in Milwaukee, was given a surprise by Boston associates on June 6, when, at the Boston office, he was presented with a gold watch suitably engraved. The presentation was made by F. T. Moore, New England district manager of the Goodrich company.

Mr. Rutherford began with the Goodrich company as adjustment clerk in the Boston office and was later chief clerk at Portland, Worcester, and Springfield. He was manager at Burlington, Vt., and for the past eight years has been city salesman in Boston.

The Goodyear Tire & Rubber Co.'s officials and representatives in New England held their annual banquet on June 13, at the Hotel Kenmore, Boston, Mass.

The Davidson Rubber Co., Boston, Mass., within the past months has effected several changes in personnel, plant, and policies. To meet the demands of the trade, it will manufacture not just one but several distinct lines of water bottles and fountain syringes. Announcement of these will be released early in July.

Another radical departure from its old policies is that it has abandoned manufacturing hand-made water bottles. From now on all its water bottles will be molded. There will be a considerable change in design, style, and appearance.

It has conducted its business solely by mail for years, but Davidson now plans to have sales representation in the field. The company reached a high position in the manufacture of rubber goods under the able ownership and management of the late Alexander MacAdam Paul. The ownership management will be continued by members of his family who are now actively associated with the company.

The Stedfast Rubber Co., now of Tokio St., Mattapan, Mass., soon will occupy the large brick factory at Elm and Oliver Sts., property of the General Electric Co. Purchase of the property from its present owners was completed on June 20.

The Mattapan concern, which makes rubber findings for shoe manufacturers, now employs 85 hands, working night and day, and plans to increase this number to 130 as soon as it occupies the North Easton plant.

The directorate of the company includes: A. Sydeman of Forest Hills, treasurer; his son, W. H. Sydeman, president; James J. Clifford, vice-president, and Alfred Grossman, secretary. A. Sydeman is well known by his long association in the rubber industry.

RHODE ISLAND

The Phillips-Baker Rubber Co.'s cutting plant at Sprague, Fuller, and Westfield Sts., Providence, R. I., was destroyed by fire early on the morning of May 25, causing nearly a quarter of a million dollars' damage, destroying more than 300 stitching and cutting machines, considerable stock both finished and in process, and throwing 700 employes temporarily out of work. The building that was burned is owned by the Mason Box Co. and was insured for $20,000. The machinery, equipment and stock within the burned building was also insured, according to Factory Manager Edmund J. Dempsey. The main factory and adjoining buildings were saved. After a few days' shutdown, operations were resumed on June 10 in the firm's new factory at Peace and Dexter Sts., and the entire plant was in operation on June 14.

The United States Rubber Co., as a part of its plan for expansion under direction of the duPont interests, intends to develop its Providence plants into one of its most important sales and manufacturing units. The local plants will form, together with the factories at Chelsea, Mass., and Naugatuck, Conn., the sundries department with both manufacturing and sales headquarters in Providence. Harlow W. Waite, who has been appointed general manager of this department with full control, states that a number of sales executives and office men have already removed their activities from New York to Providence, and that all expansion in manufacturing and sales facilities of this department will be located in Providence.

Mr. Waite has been associated with the United States Rubber Co. for 26 years. He was manager of the Providence factory from 1912 to 1920 when he was appointed general manager of all the mechanical factories of the company, a position he held until his present appointment which has brought him back to Providence. Associated with him is Charles A. Blake, who came from New York to be assistant manager of the sundries department. Sales executives who have, or will, come to Providence from New York include the following: C. E. Conlin, manager of golf ball sales; J. H. Lernard, manager of rubber thread sales; John G. Glen, manager of hard rubber sales; F. A. Arnold, manager of rubber flooring sales; H. A. Derry, manager of rubber sole and heel sales; and G. C. Burnham and W. R. Douglas, managers of sundries sales. R. L. Dickey will have charge of all sales promotion work for the department and F. A. Crane will be control manager.

The National India Rubber Co. plant at Bristol, the Alice Mill at Woonsocket, and the Millville Mill at Millville, subsidiaries of the United States Co., will be included in the footwear department under the direction of T. J. Needham as general manager with headquarters in New York City. Some changes have been made in personnel at the National company: Charles W. Short, foreman of the mill, calender, and press department, appointed a member of the chemical laboratory staff; Lewis E. Dickinson, assistant chief chemist, appointed a member of the wire technical department staff; Charles Brady, planning department, made foreman of mill, calender, and press department; John Borges, assistant foreman of gum cutting department appointed assistant foreman of mill, calender, and press department; Joseph DeCosta, assistant foreman of the mill and calender department, in charge of the press department: Cornelius McEl-

vogue, assistant foreman of packing department, made assistant foreman of gum cutting department; William MacMillan, assistant foreman of calender department, in charge of the press department, resigned. The summer shutdown of the Keds Division will be for two weeks, starting July 22 and reopening August 5.

The Woonsocket Rubber Co. announced that for the first time in a number of years the usual two weeks' shut-down of the Alice Mill will be omitted this year. The volume of business assigned to the Woonsocket plant as a result of the recent consolidation plan is given as the reason. However, there will be a brief vacation for the employes from July 3 to July 8. The Alice Mill will close over the Fourth of July week-end, shutting down July 3 and reopening July 8. The Millville plant will close for the usual two weeks from July 19 to August 5.

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, O., recently visited Providence for the purpose of inspecting the two sites which he intimated would be units in a national chain of Firestone super-service stations. He was accompanied by his son, Harvey Firestone, Jr., his secretary, W. D. Hines, and another representative of the Firestone company, Charles O. Hearn.

Superior Court Rulings. After hearings in the Superior Court before Justice Willard B. Tanner, the petition of Edward J. Coughlin against the Providence Rubber Co. and of William O. Cutter against The Joseph Banigan Rubber Co. to dissolve the respective respondent corporations were granted and final decrees entered to that effect.

The Arbeka Webbing Co., Pawtucket, R. I., is erecting an addition to its plant. The addition, about 110 by 80 feet is to be used principally for storage purposes according to John Hawe, manager. The Arbeka company manufactures webbing and tape and employs approximately 100 hands.

The Phillips Wire Co., Pawtucket, R. I., a branch of the General Cable Corp., has under option additional land adjoining its plant with a view to the eventual enlargement of its rolling mill department. If the plans now in contemplation are carried out, the officials report that equipment for the rolling of heavier copper bars than now in use at the plant will be installed.

The American Wringer Co., Woonsocket, R. I., has been granted a trade mark, "Tensilastic," to be used on squeezing rolls constructed of rubber adapted for use chiefly on laundry and textile machinery, paper machinery, and printing presses such as wringer rolls, calendering rolls, mangle rolls, etc.

The Davis-Jones Insulated Wire Co., Providence, R. I., has filed notice at the office of the Secretary of State of a decrease of capital stock from $500,000 and 200 shares of common no par value to $250,000 and 200 shares of common no par value.

The Providence Chamber of Commerce has been conducting an extensive membership campaign recently and among the concerns that have been newly enrolled are: The Hood Rubber Products Co., Inc.; the Phillips-Baker Rubber Co., and the Standard Tire & Rubber Co.

NEW JERSEY

The New Jersey rubber industry is showing considerable improvement in all branches, and orders for tires and tubes are increasing rapidly and steadily. The advent of seasonable weather has greatly benefited the situation. Some of the mills manufacturing mechanical goods report a large volume of new business with increased working hours. Plants producing rubber athletic shoes, soles, and heels are operating twenty-four hours a day. The hard-rubber situation has picked up.

Bruce Bedford, president of the Luzerne Rubber Co., Trenton, N. J., has been reelected a director of the United New Jersey Railroad & Canal Co., Trenton, N. J. Mr. Bedford and his family will sail for Europe on July 4.

Horace B. Tobin, president of the Woven Steel Hose & Rubber Co., Trenton, N. J., has sailed with his wife and daughter for a tour through Europe. They will be absent some time.

The Fisk Tire Co., Chicopee Falls, Mass., entertained authorized Fisk tire dealers at dinner at Trenton, N. J., recently. The event was one of a series of sales-organization gatherings and was attended by forty guests. Films were shown and an address was given by F. C. Braden, district manager of Philadelphia.

The Lambertville Rubber Co.'s plant at Lambertville, N. J., has resumed operations after having been closed for a long time. Dr. Peter Fireman, president of the Magnetic Pigment Co., Trenton, N. J., purchased the factory recently and decided to continue the manufacture of "Snag Proof" shoes and boots, which were turned out by the old company for many years. Joseph T. and William E. Crowley, sons of Thomas Crowley, former superintendent of the factory, will be heads of different departments. The company was organized in 1860, and besides boots and shoes, manufactured rubber bands, toys, plates, and trays.

The Combination Rubber Co., Trenton, N. J., reports that business is good in the line of tires and tubes.

The Crescent Insulated Wire & Cable Co., Trenton, N. J., has completed the erection of a three-story factory addition at a cost of $60,000. Insulated cable will be manufactured in it, and additional hands will be employed.

The Joseph Stokes Rubber Co., Trenton, N. J., is erecting a new plant addition to take care of the greatly increased business. The building will be one and a half stories high, 100 by 60 feet. The company is very busy.

Charles E. Stokes, Home Rubber Co.; **Bruce Bedford,** Luzerne Rubber Co.; **A. Boyd Cornell,** Hamilton Rubber Co.; **Clifford H. Oakley,** Essex Rubber Co.; and **General C. Edward Murray,** Crescent Insulated Wire & Cable Co., have been named to the manufacturers' committee to arrange a display at the 250th anniversary of the settlement of Trenton. The Trenton rubber manufacturers will have a large display of their goods at the Second Regiment Armory.

Whitehead Bros. Rubber Co., Trenton, N. J., has issued its annual pamphlet, "Whitehead Wisdom," containing the various products manufactured by the concern. The pamphlet contains a picture of a group of workmen taken fifty years ago and also a picture of William A. Howell, superintendent, who has been in the employ of the company since that time.

The Ajax Rubber Co., Racine, Wis., has disposed of its big plant at Trenton, N. J., to T. Arthur Karno, Samuel Krueger, Frank Millner, and the Citron-Byer Co. of Trenton. The Trenton purchasers will make no changes in the structure until title is given. It has not been decided what disposition will be made of the place. The plant was held at a price of $500,000, but was finally rated at $400,000. It covers six and a half acres of land and contains 280,000 feet of floor space.

The Essex Rubber Co., Trenton, N. J., has purchased the plant of the Acme Sanitary Pottery Co. adjoining the rubber factory. The plant has 33,000 square feet of floor space and was valued at $50,000. What use the Essex company plans to make of the factory has not yet been announced.

The Essex company is now being operated night and day with three shifts of employes. The company is rushed with orders for rubber shoes for summer wear, and it expects to continue night operations during the summer.

The Thermoid Company, Trenton, N. J., announces that all departments are being operated to capacity and that the outlook is very good.

The Pierce-Roberts Rubber Co., Trenton, N. J., is very busy and is operating a night force in the press room.

Carrier Engineering Corp., 850 Frelinghuysen Ave., Newark, N. J., has installed the Carrier System of Manufactured Weather in the offices as well as the factories of the Bibbs Manufacturing Co., Columbus, Ga., and the Mishawaka Woolen & Rubber Manufacturing Co., Mishawaka, Ind.

PACIFIC COAST

Samson Tire & Rubber Corp. expects to move into at least the main building of the new factory group being erected in Los Angeles by the middle of September. Work on the various structures is progressing well up to the contracted schedule, and in some respects the builders are ahead of time on the work. The company officials are confident that the entire big plant can be occupied by the end of the year. So congested are the No. 1 Plant at Compton and the No. 2 Plant at San Diego, and so overtaxed is the capacity of both factories, that the company has found it necessary to begin using the big mills lined up in the new factory for bulk milling of stock for the factories named.

President A. Schleicher states that Samson sales for the first quarter of 1929 were $1,990,509 as compared with 1928's first three months, $1,523,633. Earnings are said to be running considerably higher than for a similar period last year. Production of tires is being constantly stepped up, and there is no indication at present of any let-up in the big and increasing output for the remainder of the year.

Pacific Coast Rubber Co., Inc., 316 Mission St., San Francisco, Calif., one of the larger distributers of hose, belting, packing, and general mechanical rubber goods on the Coast and also a manufacturer of various specialties, reports business thus far in 1929 very much ahead of the total for the first half of 1928, and prospects are that sales will hold up equally well in all lines during the remainder of the year. The company recently enlarged its Los Angeles branch at 500 E. 3d St. Irvin Reed is president and manager; N. L. Stephens, vice president; and A. Fishbon, secretary.

Firestone Tire & Rubber Co. of California celebrated on June 17 the first anniversary of the building by President Harvey S. Firestone, Sr., of the first tire made in the Los Angeles factory, although the formal opening of the works did not take place for several months later. Vice President and General Manager R. J. Cope, in noting the rapid strides made by the Firestone organization since, states that six months ago daily production was 2,500 tires and 3,500 tubes, whereas average daily production last month was fully 5,000 tires and 7,500 tubes. While the first year's production will total nearly 1,000,000 tires, scheduled production for next year is 3,500,000. This will be made possible through the construction of large extensions to the present factory, and work on which is being rushed with all possible speed. The new addition will be composed of two units, one on each side of the present main structure. Each unit will be 180 feet wide by 447 feet long and set at either side of the main factory. A 90 by 100 feet addition will also be made to the mechanical building. Engineering details of the new units will duplicate those of the present plant, with similar decorations in interior and exterior. All construction is in charge of Vice President C. A. Myer of the parent company at Akron, O.

Construction will be begun this month by the Firestone interests of a $250,000, 2-story and basement building in Seattle to take care of wholesale distribution in Washington, Montana, and part of Idaho. The new building will also afford one-stop and super-service features.

Fisk Rubber Co. of New York, through Frank K. Espenhain, executive vice president, who recently visited the leading cities of the Coast, has assured tire dealers in the Pacific area that, contrary to rumors to the contrary, there will be no change in the company's policy of marketing its products through distributers and dealers instead of through direct factory branches. The company, he says, believes that the dealer has a vital place in the tire business and the company will encourage their enterprise with constructive merchandising methods and guarantee that their business will not be encroached upon through any direct sales system.

Pacific Coast Mechanical Rubbermen's Golf Association is planning to hold another tournament early in the fall. According to President W. C. Hendrie, the place for the contests has not yet been determined, but a choice will be made soon of either the Rancho Club, Lake Norconian Club, or the Del Monte links. The other officers are: J. B. Lippincott, vice president; Walter Smith, secretary-treasurer; and M. S. Sprague, J. B. Lippincott, W. Art, Corder, Geo. C. Spokesfield, executive committee.

American Rubber Manufacturing Co., San Francisco, Calif., reports that its factory in Oakland is not only working at full capacity but also doing much overtime. Demand for belting, hose, and general mechanical goods is much better than during the midyear period of 1928, and the prospects for the remainder of the year are excellent. Since the first of the year there has been a particularly large increase in demand and production of one of the company's newer specialties, "Foamite" rubber-covered hose, made in several sizes and supplied largely for oil fields and refineries, where it is used for fire protection.

Kelly-Springfield Tire Co. has opened a direct factory branch at 16th and I Sts., Sacramento Calif., to serve 150 dealers in the central part of the state. A. N. Herbert is in charge.

C. P. Hall Co. of California, 1340 E. 6th St., Los Angeles, Calif., specializing exclusively in chemicals for rubber manufacturers, reports that sales for the past month were the largest for any month since the concern established quarters in the Southwest. B. E. Dougherty is in charge.

Brown Tube Corp., Graybar Building, 420 Lexington Ave., New York, N. Y., has contracted with Nelson & Price, Inc., Los Angeles, Calif., for the distribution of its puncture-proof tube in the Southwest. The Nelson & Price concern, which maintains eight branches, last year did an India tire business of $1,750,000, and has set $2,000,000 as its goal for 1929.

Universal Rubber Manufacturing Co., 938-958 Harrison St., San Francisco, Calif., reports that it is fairly swamped with orders on its general line of mechanicals and also numerous specialties, and has been obliged to do much overtime and make a considerable addition to equipment. The officers are: Geo. M. Stevens, president; John L. Moore, vice president; John V. Filippini, secretary and treasurer; and C. M. Shannon, superintendent.

The Seiberling Rubber Co., Akron, O., while confirming the report that it has decided to erect a tire factory at Oakland, Calif., to supply far west and trans-Pacific demand, states that it is not yet prepared to announce when work will be started. The Oakland Chamber of Commerce is confident that construction operations will be started early in the fall. The project, it is said, will be one of considerable magnitude, and the site favored, a 100-acre tract at the foot of Jones Ave., will allow ample space for original construction and expansion, as well as providing for rail and water shipping facilities.

H. J. Thompson, Seiberling sales executive, of Akron, has been appointed to succeed the late M. Harvey Anderson as San Francisco branch manager with headquarters at 60 Federal St.

Neversoil Rubber Products Co., maker of rubber aprons for surgical, chemical, and toilet purposes, undertakers' rubber articles, rubber goods for hospitals, etc., has moved from 257 S. Spring St., Los Angeles, Calif., to 621 E. 9th St. Chas. M. Smith is manager and Geo. H. Smith assistant.

F. S. Pratt, works manager of the Pacific R. & H. Chemical Co., rubber reclaiming plant at El Monte, Calif., returned recently from New York where he had been in conference with executives of The Roessler & Hasslacher Chemical Co.

Eno Rubber Corp., Los Angeles, Calif., reports that business is exceptionally good and that its factory in Torrance, despite continual overtime, is finding it difficult to keep up with orders. Among the products for which there is strong demand are inflatable mattresses and seat cushions, sport balls, oil well valves, swabs, and packer rubbers, tubing, non-skid bath mats, hose, motion picture and other rubber specialties. Roy R. Musser is president; C. N. Merralls, vice president; R. M. Alcock, treasurer; J. Karl Lobdell, secretary; and all of whom with D. W. Pierce, Dr. Philip T. Hoeffer, and T. S. Hamilton are directors.

Pacific Goodrich Rubber Co., Los Angeles, Calif., is working on three shifts a day and constantly adding equipment in an endeavor to produce 7,500 tires daily as warranted by increasing demand. Not only is business exceptionally good in the entire coast section but an increasing trans-Pacific business is forcing the stepping up of production. Secretary J. C. Herbert has lately been in conference with officials of the parent Goodrich company at Akron relative to devising means for more speedily increasing output. General Sales Manager F. E. Titus announces the appointment of Frank H. Schweitzer as manager of the company's new aviation department. His field will embrace the eleven far west states.

Recent visitors to the Pacific Coast. These included Mr. and Mrs. Geo. B. Hodgman, Mr. Hodgman was the third of a generation of New York rubber manufacturers, having been president of the old Hodgman company and also treasurer and president of the Rubber Association of America; Horace Royal, rubber broker, Trenton, N. J.; Vice President D. W. Warden of the Dayton Rubber Manufacturing Co., Dayton, O.; Paul A. Polson, Polson Rubber Co., Garrettsville, O.; Harry A. Husted, president of the American Hard Rubber Co., Akron, O.; Stephen L. Chubbuck, sales manager, Falls Rubber Co., Cuyahoga Falls, O.

Pacific Golf Ball, Ltd., Los Angeles and San Francisco, Calif., has announced the opening of new offices at Portland and Seattle, Wash., and San Diego, Calif. The company reports also that its direct-to-user sales campaign on its "Pacific" golf ball is progressing very well.

Willard Storage Battery Co., Cleveland, O., will not take advantage of the option which it held on a factory site in Los Angeles but will erect a big coast plant for the making of its well-known threaded rubber batteries in Oakland. It is said that proximity to the new Chrysler and existing automobile plants in the latter city was no small factor in determining the location of the battery factory which will cost much over $500,000, and the construction of which will be started in a few months.

Goodyear Tire & Rubber Co. of California, which started production at its Los Angeles plant June 14, 1920, produced its 14,000,000th tire June 24. On the following day it had produced 1,727,250 tires since January 1, 1929, as compared with 1,254,514 for the same period in 1928, an increase of 472,736 or 36 per cent. The big plant is running 24 hours a day and the output is averaging close to 13,000 a day, with no sign of demand easing up. There are 3,200 persons employed, and the annual payroll exceeds $5,500,000. Crude rubber consumption is averaging 17,000 tons a year, and cotton consumption by the adjoining Goodyear Textile Mills is about 32,000 bales a year.

J. T. Moore, Pacific coast manager, Quaker City Rubber Co., San Francisco, Calif., has recently returned from a visit to the factory at Philadelphia. During his stay he was impressed by the vast amount of business on hand and the increased production in the belting and the hose departments. The factory looked especially well with its new equipment, and there was a general air of progress and prosperity. Business on the Coast also is increasing and it is expected that this condition will continue.

U. S. Rubber Co. Changes Coast Division Line-up

The effect of the striking rearrangement in line-up of the Pacific Coast Division, United States Rubber Co., Inc., which recently became effective, on its merchandising operations is being studied by the trade with close interest. Although but a short time in force, the new order of things is said by General Manager J. B. Brady, of San Francisco, to be not only working smoothly but has already resulted in a marked increase in enthusiasm and efficiency on the part of the whole staff. As under the new system each man knows exactly where his authority begins and ends and is assured that his best endeavors will be fully appreciated, he works with a better spirit than ever before.

The division sales managers have been given wider scope and responsibility with regard to the operations of their departments, which also carries through to the district sales managers. In other words, each of the five major departments of the business stands on its own feet, and the heads of these departments are directly accountable for results. This is in contrast with the former system in which each branch was operated by a manager and the department managers were responsible to him. Under the new set-up, the former department managers become district sales managers and are responsible directly to the division sales managers.

The branch service manager is accountable for all inside operations, such as accounting, credits, receiving, storing, and shipping of merchandise, thereby relieving the sales departments of much detail work.

Division and District Personnel

Associated with Mr. Brady and Treasurer W. H. Gilbert at the San Francisco headquarters are the following Pacific Division sales managers: H. A. Farr, tires; E. H. White, footwear; H. B. Chandlee, mechanical goods; L. B. Hitchings, clothing; and W. H. Heckmann, sundries. The district sales managers are as follows:

San Francisco—J. D. Ferris, tires; G. T. Ward, footwear; H. E. Selje, mechanicals; A. E. Hine, clothing; L. F. Van Inwagen, sundries.

Los Angeles—J. B. Magee, tires; C. J. Noonan, footwear; F. E. Stringer, mechanicals; H. B. Grim, clothing; P. F. Conlon, sundries.

Portland—C. W. Ort, footwear; O. M. Campbell, tires; H. G. Lockerbie, mechanicals; I. J. Atwood, clothing; L. L. Rau, sundries.

Seattle—J. A. Brogan, footwear; R. J. Barry, tires; G. W. Yore, mechanicals; C. H. Sutherland, clothing; G. B. Davies, sundries.

Spokane—L. E. Chalenor, tires; G. E. Poling, footwear and sundries; A. B. Norris, mechanicals.

Salt Lake City—H. M. Green, tires and mechanicals; C. H. Gillett, footwear and sundries.

Branch Service Managers

San Francisco, F. H. Brooks; Los Angeles, Wm. Morrison; Portland, J. E. Linney; Seattle, Frank Todd; Spokane, R. C. Conley; Salt Lake City, H. T. Benson.

MIDWEST

The Goodyear Tire & Rubber Co., Akron, O., has announced the appointment of Alfred K. McFarland, former manager of its Fargo, N. D., branch, to the position of managing director of the Goodyear Tire & Rubber Co., A. G., Berlin, Germany. Mr. McFarland sailed recently to take up his new duties. He will be succeeded at Fargo by A. R. Ruplin, former assistant manager of the Goodyear branch at Chicago.

United States Rubber Co., New York, N. Y., and the **J. F. Dennis Co.** have leased a large corner building in the automobile row of Duluth, Minn. The building, which is located at 302 E. Superior St., will be used as a general wholesale and retail branch for United States rubber products. Extensive alterations and repairs have already been started to prepare the building for occupancy by the rubber company.

The Baldwin Rubber Co., Pontiac, Mich., according to its president, Samuel C. Clark, and its treasurer, C. R. Talbot, has acquired the Owosso, Mich., plant of the Michigan Rubber Co. The factory has 20,000 feet of floor space, but its present production is only one-fourth that of the Pontiac plant. Ample facilities, however, make expansion possible. The Baldwin company manufactures floor mats and running-board covers for automobiles.

Carrier Engineering Corp., specialist in air conditioning with main offices and laboratories in Newark, N. J., has announced the opening of a permanent engineering and sales office in the Buhl Building in Detroit, Mich., under the direction of Herbert Peacock, who leaves his position as engineering assistant to the sales manager to take charge of this territory.

CANADA

Prices on mechanical rubber goods are firm and without change. The wet season has retarded the sale of garden hose so far this year. The season of outdoor sport has arrived, and there is an active demand for light rubber fishing boots. Whether it is because of the wet spring or a change in the minds of purchasers, the sale of "sneakers" has been less active in certain sections of the country than in several previous years. The demand is for stout leather boots and oxfords for boys.

The 5 per cent discount on placing orders for rubber footwear has expired and a fair amount of business has been booked. Owing to unsuitable weather conditions last winter the carrying over of overshoes and lumbermen's rubbers was heavier this spring than last. Stocks of low rubbers, however, seem to have been well cleaned up. Prices this spring were about 12½ per cent lower than a year ago, and the market at present is quite strong. One prominent retailer regards rubbers as a safe purchase for next season's stock at today's prices.

J. W. Jordan, manager and vice-president of the Canadian Goodrich Co. Ltd., Kitchener, Ont., has resigned and will be succeeded by E. S. Sergeant, who for the past 14 years has been identified with the Goodrich head office in Akron, O.

Dominion Rubber Co., Ltd., Montreal, P. Q., is running full pages in the newspapers drawing attention to the new 1929 Royal Cord Tire with new construction and new tread. The company recently observed "Fleet Foot Week" by extensively advertising its line of rubber-soled canvas shoes. The display material surpassed anything ever sent out to dealers by this firm, and was supplemented by one of the largest newspaper advertising campaigns ever put out by this progressive organization.

At a recent monthly meeting of the Purchasing Agents Association of Montreal, held at the Mount Royal Hotel, the Dominion company exhibited a movie entitled "The Romance of Rubber."

E. G. Skirrow, who has been appointed advertising manager of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., had been assistant advertising manager for the past eighteen years. A. A. Briggs, the former advertising manager, has joined the staff of the Press Agency Bureau, Ltd., Toronto, which directs Dunlop advertising.

P. C. Evans of A. Schrader's Son, Inc., Toronto, Ont., was recently elected one of the trade members on the board of the Canadian Bicycle & Sport Goods Association.

H. F. Schippel, tire design engineer of The B. F. Goodrich Rubber Co. Akron, O., who is a member of the S. A. E. aeronautical sub-committee on tires, wheels, and axles, spoke at the Canadian Goodrich Aeronautical luncheon held recently at the Mount Royal Hotel, Montreal, P. Q. The work done by this committee represents the combined efforts of American tire, wheel, and airplane manufacturers to set up standards in harmony with current practice, and Mr. Schippel urged their adoption as far as possible by Canadian aeronautical interests.

Robert Simpson Co., Ltd., Toronto, Ont., one of Canada's greatest and most reputable retail and mail-order merchandising companies, has secured the exclusive Canadian rights for a guaranteed puncture-proof tire and tube combination known as "Simco," which is guaranteed for 12,000 miles.

Wm. L. Dargie has joined the selling staff of the Miner Rubber Co., Ltd., Halifax, N. S., branch.

Fit Process Co., Ltd., 3715 Park Ave., Montreal, P. Q., is a specialist in general tire repairs and is also sales distributer for Fit Process machinery for North America.

Quesnel & Frère, Montreal, P. Q., local representative for the Miller Rubber Co., Akron, O., has moved to larger and more commodious quarters at 821 Notre Dame St. West.

Canadian Goodrich Co., Ltd., Kitchener, Ont., during the Airplane Exhibition recently held in Montreal advertised in the press quite extensively Goodrich Silvertown airplane tires, drawing attention to the fact that these pioneer tires went with the "Southern Cross," with Lindbergh, and with many other celebrated aviators to help write the first stirring chapters in the history of flying.

Goodyear Cotton Co. of Canada, Ltd., St. Hyacinthe, P. Q., will immediately build a four-story extension, 408 by 140 feet costing $1,850,000 including new machinery. C. R. Smyth of the Goodyear plant at New Toronto, Ont., will supervise the building construction.

Gordon H. Nickel, sales manager of the Columbus Rubber Co., Montreal, Ltd., flew from Toronto to Montreal recently in 2 hours and 35 minutes in order to keep an important business engagement.

W. H. Miner, Miner Rubber Co., Ltd., Granby, P. Q., will serve as second vice president on the official board of the Canadian Manufacturers' Association. He was also chosen as chairman of the Education Committee.

John Westren, vice president and managing director of Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., was lately elected president of the National Club, Toronto, the leading club of that city. He was also selected to represent the Canadian Manufacturers' Association, Toronto Branch, at the Canadian National Exhibition to be held in Toronto next August.

The Canadian Manufacturers Association has elected the following rubber men as executives: E. W. Be Saw, Firestone Tire & Rubber Co. of Canada, Ltd., on the Membership Committee, Hamilton Branch; Jos. Maton, Miner Rubber Co., Honorable Secretary, Granby, P. Q., Branch; W. A. Eden, Dominion Rubber Co. Ltd., on the Executive Committee.

F. Longdon & Co. (Canada), Ltd., Toronto, Ont., has commenced to manufacture seamless knitted elastic anklets and knee caps and are the first actual manufacturers of such articles in Canada.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont. Earnings in 1928 were in excess of 20 per cent on the common, and, according to reports, 1929 will be even more favorable. The Toronto plant is turning out 10,800 tires a day, and it is stated that it could sell 12,000 if the output could be speeded up. The Bowmanville, Ont., plant which produces hose, belting, motor truck tires, rubber heels and soles, mats, and asbestos packing is also said to be congested, and is running to maximum capacity twenty-four hours a day. At no time in the company's history has its product been as satisfactory, or has there been such a general demand for the product.

MEASURED BY IMPORTATIONS OF CRUDE rubber, 1928 was the greatest year in the history of rubber manufacturers in Canada. The gross value of production is estimated at over $100,000,000. The industry has made substantial progress, especially when one considers that neither rubber nor cotton is grown in Canada.

Rubber Reclaimers' Association Formed

The Rubber Reclaimers' Association Inc., was duly organized at a meeting held on June 25 in New York, N. Y. The names of the charter members and the firm representatives who were present were as follows:

Akron Rubber Reclaiming Co., Barberton, O., William Welch; Appleton Rubber Co., Franklin, Mass., P. O. Lawton; Bloomingdale Rubber Co., Butler, N. J., Clark W. Harrison; Boston Woven Hose & Rubber Co., Cambridge, Mass., H. S. Royce; E. H. Clapp Rubber Co., Boston, Mass., J. S. Clapp; Hood Rubber Co., Watertown, Mass., R. B. Woodbury; Pequanoc Rubber Co., Butler, N. J., Joseph F. McLean; Philadelphia Rubber Works Co., Akron, O., J. S. Lowman; Rubber Regenerating Co., Naugatuck, Conn., E. A. Anderson; Somerset Rubber Reclaiming Works, New Brunswick, N. J., Irving Laurie; United States Rubber Reclaiming Co., Inc., Buffalo, N. Y., L. J. Plumb.

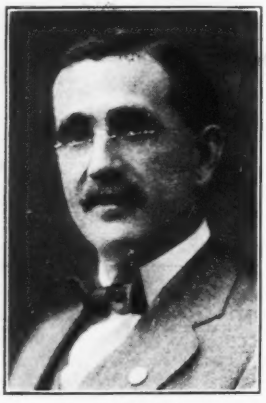
The following executive officers were elected: Clark W. Harrison, president; L. J. Plumb, vice president; J. S. Lowman, secretary and treasurer.

The Executive Committee which consists of five members includes the above named executives together with J. S. Clapp and William Welch.

Obituary

Buffalo Representative of Republic Rubber Co.

ON Tuesday morning, May 7, The Republic Rubber Co., Youngstown, O., received the orders and reports for the previous day from its Buffalo, N. Y., representative, W. C. Volk. Almost simultaneously came the telegram announcing his death, which was the result of a heart



W. C. Volk

attack. He had served his company well for eleven years. Mr. Volk had spent a lifetime in the sale of mechanical goods, for he had been with the Boston Belting Co. approximately twenty-five years prior to his joining with Republic.

Mr. Volk was born on February 11, 1873, at Lancaster, N. Y. When he was twenty, he went with the Boston Belting Co. This, of course, indicates that he had no extensive formal education but that he devoted his whole life to the rubber business, his chosen vocation.

He leaves a widow, a son, and a daughter.

Funeral services were held in Buffalo on Thursday, May 9. They were attended also by his many friends and business acquaintances.

James O'Sullivan

JAMES O'SULLIVAN, 83, died on June 20 at his home in Lowell, Mass. He was taken ill on June 2 and, although he rallied several times, finally succumbed to a shock.

Mr. O'Sullivan was born in Ireland. He settled in Lowell in 1867. In 1875 he purchased a retail shoe business. Two years later his younger brother, Humphrey, joined him and the partnership known as O'Sullivan Bros. was formed.

With his brother Humphrey, he invented the O'Sullivan rubber heel, and organized the O'Sullivan Rubber Heel Co. in 1899. This company grew steadily and increased its business until it became of international prominence. About 20 years ago, James O'Sullivan retired from active business.

He was a charter member and president of the Holy Name Society; also a member of St. Patrick's Parish; the St. Vincent de Paul Society; the Third Order of St. Francis; the Ancient Order of Hibernians; the Catholic Young Men's Lyceum; Lowell Lodge of Elks; American Irish Historical Society; Irish National Foresters; and the A. O. H. Building Corp. He was an honorary member of Gen. B. F. Butler Corps, and a former alderman, prominent in civic activities.

C. W. Davis

C. W. DAVIS, manager of the Goodyear Tire & Rubber Co. branch at Jacksonville, Fla., died on May 27 and was buried the next day at Jacksonville.

Mr. Davis, a native of Georgia, entered the employ of Goodyear as a counter salesman at Atlanta, on April 1, 1915. After serving as a general-line salesman at Atlanta he was promoted to zone manager at Jacksonville. Later he was made service manager and finally branch manager there.

During the past ten years he had been in ill health. Despite this handicap he made a splendid record with Goodyear and was regarded by the management as one of the outstanding branch managers of the organization.

Prior to his connection with Goodyear, Mr. Davis had been in the banking business.

He is survived by his wife and two children.

V-P and General Manager Washburn Wire Co.

THOMAS WRAY, vice president and for the last fifteen years general manager of the Washburn Wire Co., Phillipsdale, East Providence, R. I., died on Friday, May 24, at his residence in Providence, following an illness of three weeks. Born sixty-five years ago in Ireland, Mr. Wray came to the United States when a small boy. His parents made their home in Worcester, Mass., and in that city he began his business career with the American Steel and Wire Co. In 1901 he moved to Providence and entered the service of the Washburn Wire Co. After holding the office of general manager for twelve years, he was elected vice president three years ago, retaining, however, his position as manager.

Surviving him are his widow, three sons, and four brothers. He was actively identified with St. Stephen's Episcopal Church and the Churchmen's Club. He was a member of the Independent Order of Odd Fellows, the British Empire Club, and the Wannamoisett Country Club. The professional societies with which he was affiliated were the American Iron and Steel Institute and the Providence Engineering Society.

Well-Known President of Meade Rubber Co.

WHILE in Maine on his annual fishing trip, James Meade, president and treasurer of the Meade Rubber Co., Stoughton, Mass., was stricken with a heart attack and died instantly on May 19. Mr. Meade had devoted his whole life to the rubber industry, for immediately after leaving the public schools of Stoughton, where he was born of Irish parents on March 3, 1868, he found employment as a shoe worker but left to join the Mystic Rubber Co., Stoughton, now the American Rubber Co. He was one of the organizers of the Plymouth Rubber Co., and when the company was incorporated he became vice presi-

James Meade

dent and superintendent of the factory at Canton. To the regret of his employes he resigned that position in March, 1916, to organize the Meade Rubber Co., rubberizer of fabrics and manufacturer of rubber heels. He started that company in June, 1916, and saw it incorporated in April, 1922, with himself as president and treasurer. Besides, he was granted patents on machinery and processes used in connection with the manufacture of rubber goods.

He is survived by his widow, whom he married in July, 1891, four children, several grandchildren, and a brother, Matthew Meade.

He was also vice president and director of the Stoughton Trust Co. and affiliated with the San Salvador Council, K. of C., M. C. O. F., A. O. H., Boston Chamber of Commerce, Chicataubut and Blue Hill Country Clubs, the Rubber Manufacturers Association, and the Institution of the Rubber Industry London, England.

The Rubber Industry in Europe

GREAT BRITAIN

Cooperative Selling

The very cautiously worded resolution anent the possibility of forming a co-operative selling organization for crude rubber that was passed at the last meeting of the Rubber Growers' Association, has aroused a certain amount of interest, particularly among shareholders. Whether there is much hope that something definite will be accomplished in regard to a selling scheme is rather doubtful in view of past experience. Time and again instances from other industries have been adduced to show what has been done by others and in the expectation that producers would decide to support a selling scheme for the rubber industry, but without success. A shareholder, with the *naïveté* common to the average shareholder suggests that instead of waiting until a suitable selling scheme has been formulated, the Rubber Growers' Association should immediately appeal to all producers asking them to suspend all sales for two months and then to effect sales only gradually. Why, if the Rubber Growers' Association had sufficient influence with its members to bring that to pass, what might it not accomplish! As it is, the very wording of the resolution mentioned above has about it a prophetic hint of futility, for what does it say, "That a committee be formed to *investigate* the *practicability* of *drafting* a scheme for the establishment of a cooperative selling organization."

Meantime it would be interesting to know how many firms have already sold forward from one-fourth to one-half (if not more) of their 1929 crops at prices ranging from 8½ pence to 9½ pence per pound. The perusal of those reports that have already been published show that quite a few estates have done so, and if the number is sufficiently large, it would suggest that producers have been doing their best to keep rubber prices below the shilling mark, at least for the greater part of this year.

Rubber Exterminates Pests

Much interest has been shown here in press reports concerning the discovery that rubber ground sheets are effective in combating the so-called "leather jacket," the grub of the crane fly or daddy longlegs. This grub causes enormous damage to lawns, bowling greens, tennis courts, etc., and had defied the efforts of entomologists and horticulturists to prevent its ravages. It seems that a Bournemouth Corp. employe was watering the Argyle bowling green, Westbourne, Bournemouth, when he was called away, leaving the hose with the water running, lying on a small rubber mat used by bowlers. When he returned and lifted the mat, he found that the ground beneath was a mass of dead "leather jackets." A similar method was tried on another green where large rubber ground sheets were used and the hose allowed to run for about three hours. The result was exactly similar, and for twelve days, 28 pounds of this destructive grub was secured daily and destroyed, so that the green was entirely cleared of the pest.

Leyland & Birmingham Co.

The Leyland & Birmingham Rubber Co., Ltd., has just opened a rubber factory in Dublin to cater to the Irish trade, which has been increasing with great rapidity during the past few years. This factory, known as the Meath Works, has an extensive floor area. In addition, there are other buildings included in the lease, which would provide the necessary space for future expansions. The new enterprise will concentrate chiefly on the manufacture of Leyland waterproof coats and Leth-a-cote leather coats, specially for the Irish trade. The management will be in the hands of A. A. Shewan.

Derby Cables, Ltd.

A new private company with a capital of £100,000 has been formed to manufacture electric cables. The concern, known as Derby Cables, Ltd., is building a new factory in Alfreton Road, Derby, and it is understood that Haslam & Newton, Ltd., holds a controlling interest in the concern. The directors are C. A. Newton, J. H. Lord, Lieut.-Colonel H. Newton, H. B. Potter, and F. Newton. The factory, which will be thoroughly up-to-date in its equipment, will produce paper-insulated and armored cable, all types v. i. r. cables, compound-insulated cables of all types, mains, shaft and trailing cables for collieries, dynamo and other flexible cables, railway signal cables, and ship wiring cables. H. E. Sewell, who for 26 years was works manager of the Macintosh Cable Co., Ltd., is to be general manager, and L. J. Ransom, who has left his position as production manager of the Liverpool Electric Cable Co., Ltd., will be works manager.

Rubber Processes, Ltd.

This company has been formed to acquire the property and secret processes of the Robertown Rubber Co., Ltd., of Robertown, Liversedge, Yorks. It has been registered with a capital of £125,000 in shilling shares, of which 1,650,000 have been offered to the public at par, while of the remainder, 550,000 are to be allotted in part payment of the Robertown company's property and processes, and the rest are the subject of an option. The secret processes mentioned cover a special composition in which small amounts of rubber are used and can be employed in the manufacture of Roberpile flooring, mats, ebonite, sponge, tiles, paneling, covering for pulleys, textile rollers, brake linings, etc. It is claimed that with the exception of ebonite, the main products can be finished ready for service within about an hour after the time the operation is commenced. The inventor, P. H. W. Cloud, will be production manager for the new concern, and the directors are Sir Charles Claxton Sanderson, the Hon. Edward Walford Karslake Gully, and Thomas Knowles.

British Notes

Electric Hose & Rubber Co., Wilmington, Del., U. S. A., has announced the purchase of a factory in Watford, England, which is sixteen miles northwest of London on the L. M. & S. Railroad. This factory has approximately 160,000 square feet, and the company plans to use it for the manufacture of all kinds of hose and tubing exclusively. Operations are expected to begin with the new year.

India Rubber Manufacturers' Association, Ltd. The new chairman is Mr. L. V. Kenward, general sales controller of the Dunlop Rubber Co., Ltd. It is interesting to note that he is the second chairman connected with the Dunlop company that the Association has had, for in 1925 the chairman was Sir George Beharrel, the managing director of the Dunlop concern. Mr. Kenward, with his ability and thorough knowledge of the rubber trade, is expected to do much for the Association.

British Insulated Cables, Ltd., Prescot, claims to have successfully overcome the difficulty caused by the tendency of vulcanized rubber to deteriorate rapidly in the presence of corrosive agents as damp iron rust, dilute acids, the fumes in chemical works, etc. The firm coats the outer surface of the vulcanized rubber with a special flexible and waterproof material. The core is then bound with the usual layer of tape and the whole vulcanized together. The rust-proof wires and cables thus produced are suitable for use in iron pipes, conduits, lamp standards, etc.

The Rubber Growers' Association has elected as its new chairman, G. H. Masefield, who has had many years of practical experience in planting and estate management. He started his planting career in 1897 in Ceylon taking up tea. In 1902 he also became interested in rubber and planted his first rubber clearing in 1904. His marked abilities were soon recognized and

in 1910 he was appointed general manager of the Ceylon Tea Plantations and associated companies. In 1922 he left the East and joined the Board of the Ceylon Tea Plantations, Ltd., in London. He was appointed to a seat on the council of the Ceylon Association and was elected president for the years 1925-26. In 1923 he joined the council of the Rubber Growers' Association.

GERMANY

Kautschuk Gesellschaft

The third general meeting of the Deutsche Kautschuk Gesellschaft took place from May 12 to May 14 at Hannover. About 125 members attended.

The total membership of the society is now 391, it was announced. Since last year an agreement exists between the Deutsche Kautschuk Gesellschaft and the Reichsverband der Deutschen Kautschuk Industrie whereby questions of standardization will be jointly solved. The scope of the society's paper, *Kautschuk*, it was emphatically pointed out, in future is limited to purely scientific articles and not, as frequently had occurred, to articles which are really advertisements for individual firms.

The meeting was informed that for the coming program the Kautschuk Gesellschaft intends now to concentrate on mechanical and chemical testing methods. Positive work in this and other directions could really only now be expected from the society, which finally has the entire rubber industry of Germany back of it.

The scientific meeting was opened on May 13, when H. Staudinger read a paper on "The Constitution of Rubber." This was followed by the "Knowledge of Rubber and Its Fractions," by R. Pummerer. W. Deutsch discussed "Fundamentals of German Standardization." W. Lindemann took as his subject "Economics and Statistics of the German Rubber Industry." H. Zocher reported on "The Optical Anisotropy of Stretched Rubber"; while the last paper of the day was "Knowledge of the Color Reactions of Rubber and Gutta Percha," by F. Kirchhof.

On the second and final day for reading papers, E. A. Hauser presented "On Structural Differences in Masticated and Unmasticated Crude Rubber Mixings and Vulcanizates and Their Practical Significance." L. Auer treated "The Use of Refined Oils in the Production of Factices"; M. Mohr, "The Automatic Regulation of Vulcanization"; and F. Kirchhof, "Crystal Structures of Tjipetir Gutta Percha."

The Achema VI

The Achema VI, Exhibition for Chemical Machinery and Apparatus, will be held in Frankfurt a. Main from June 10 to June 15, 1930, at the same time as the general meeting of the Association of German Chemists. Great preparations are being made, and it is expected that this exposition will in every way surpass the preceding one held in Essen in 1927, particularly as the forthcoming one will be a jubilee exhibition, since the first had been held in 1920. Frankfurt a. Main is the greatest chemical center in the world, and the Achema VI will afford an unusual opportunity to show the progress made, since the Essen event, in chemical apparatus and machinery.

Rubber Statistics

Imports of crude rubber by Germany during the first quarter of 1929 show a considerable increase over those for 1928; the comparative figures are 145,753 quintals, value 28,211,000 marks, against 105,123 quintals, value 37,833,000 marks. The actual consumption of crude rubber, omitting stocks on hand, came to 141,335 quintals, against 91,346 quintals in 1928.

An increase in the exports of manufactured goods is also recorded for the first quarter, the 1929 figures totaling 52,160 quintals, value 30,381.000 marks, as compared with 46,569 quintals, value 28,695,000 marks, during the same period of the preceding year. Imports of manufactured goods also advanced during the quarter and were 20,828 quintals, value 10,729,000 marks, as against 17,809 quintals, value 9,928,000 marks.

Price Fixing of Insulated Wire

Leading manufacturers of insulated wires and cables at a meeting held recently in Berlin decided to found a price convention, thus sanctioning an agreement made between the different factories on April 20. At that time it was decided to raise prices on an average of 8 per cent by reducing rebates on price lists. This move nullified an earlier increase of 5 per cent caused by the rise in the price of rubber. It is understood that at present negotiations are continuing between wholesale dealers and manufacturers. The demand for insulated wire has lately fallen off, it is reported, which seems a direct cause of the increase in prices.

Company Notes

C. Muller Gummiwaren Fabrik, A. G., Berlin-Weissensee, reports a satisfactory business year and a dividend of 8 per cent. The financial condition is stated as good; all departments were kept well-occupied during the year; however, the general complaint about poor prices obtained for products was here also heard, and it was only by means of improving the technical arrangements that the effect of these prices could be counteracted.

The West-deutsche Draht-und-Kabelwerke A. G., Duisburg. Although improved methods in the factory resulted in an increase in turnover amounting to 30 per cent, nevertheless competition among the various factories and consequent underselling was so serious and the gains made so slight that this company again shows a deficit. The loss on a capital of 420,000 marks came to 73,637 marks, while the year before the loss had been 32,524 marks.

The Asbest und-Gummiwerke Alfred Calmon, A. G., Hamburg, closed its accounts with a balance of only 5,600.60 marks, on a capital of 4,090,000 marks. No dividend was declared. Sales during the latter half of 1928 fell off month by month, and the prices for finished products were thereby adversely affected. Series strikes in various industries which the firm usually supplies added to the difficulties. The program of expanding and improving the machinery and plant continues. In 1928 that cost 298,130.07 marks.

The Nienburger Maschinenfabrik A.G., Nienburg i.e. (Nienburg/Saale) Saale, announces that it has turned over its entire construction works specializing in rubber machinery to the Sachsische Maschinenfabrik vorm. Rich. Hartmann A.G., Chemmitz, and will now form a special division of this firm, under the name of Division Nienburger Maschinenfabrik, Rubber Machinery Construction. The association with this large firm, which employs about 6,000 workers, will enable the Nienburger works to carry out those expansions which the increasing demand for its products necessitates. Incidentally the entire staff of trained workers and the management goes over to the Sachsische Maschinenfabrik.

The Continental Caoutchouc und Gutta-Percha Co., Hannover, at a general meeting decided to change the name of the firm to Continental Gummi-Werke A.G. This new firm will take charge of purchases and manufacture; while the sales end will be handled by another company to be known as the Continentale Caoutchouc G.m.b.H. Discussing the business condition, the general director, Mr. Tischbein denied reports current in the press which said that the Continental had entered negotiations with a foreign automobile concern making the Continental a subsidiary.

HOLLAND

The Nederlandsche Kabelfabrik states in its report for 1928 that the year's business was satisfactory on the whole. The turnover showed a gratifying increase for which larger exports were in part responsible. Prices for cables continued fairly stable in the local market and did not show much difference as compared with those prevailing the year before. On the other hand, costs were increased because of the upward tendency of raw materials, which naturally had the effect of reducing profits. Nevertheless the company booked profits for the year amounting to 1,717,000 guilders as compared with 1,345,000 guilders in 1927. It is proposed to pay a bonus of 15 per cent besides the statutory dividend of 6 per cent, and to carry forward 159,000 guilders. The year before the bonus had amounted to 24 per cent.

The Rubber Industry in the Far East

MALAYA

Stocks and Shipments

A puzzling situation has arisen here with regard to rubber. When the abolishment of restriction was announced, it was freely predicted that the market would be swamped with hoarded rubber and that prices would slump dangerously. However, figures of stocks published by the local authorities showed that accumulated stocks were not nearly so high as had been expected, and this circumstance in addition to the unexpectedly high demand for crude rubber from America and to a lesser extent from Europe had the effect of sending rubber up to a price that was much better than producers had dared to hope for. A wave of optimism resulted. But now, as month after month shipments from Malaya exceed 40,000 tons, doubt is arising, the more so because the past wintering period had been unusually severe.

Many suggestions are made to account for this condition. Concealed stocks offer the best solution. Many estates must have reported incorrectly rubber on hand; small holders, not supervised closely, probably also had more rubber on hand than was stated. Dubious methods of complying only with the letter of the law must have been adopted by many.

One suggestion, namely that estates are producing very much more than on the basis of the standard production expected, and that consequently assessments had not been equitable during the restriction period, would be the most favorable. Unfortunately, figures for estate productions do not support this belief. Baker, Morgan & Co., Kuala Lumpur, in a recent report, states that in order to check up on this suggestion, it took the average yields of 22 Malayan rubber estates for the periods November, 1927-January, 1928, and November, 1928-January, 1929. No choice had been made: the companies were the first 22 on an alphabetical list of companies that regularly publish their outputs. For the first-named period the total output was 3,040,479 pounds and for the second 5,198,883 pounds. During the first-named quarter estates were permitted to export 60 per cent at minimum duty, during the latter there was no restriction. If the standards of production had been equitable, the increase in production during the unrestricted period should be 66.6 per cent or a total of 5,067,465 pounds. The actual figure was 5,198,883 pounds, or a difference of only a little over 2.5 per cent. This would indicate that the estates are not producing very much more rubber than they should theoretically. Another point is that to a large extent increases in estate output must have been influenced by the period of resting undergone during the restriction period and that consequently it cannot be expected that productivity will continue for long at the same rate.

Chinese Dealers

An interesting light is thrown on the practices of Chinese rubber dealers by the decision of European dealers to change the marketing methods prevalent in Kuala Lumpur. Up to the end of March, the practice had been for Chinese dealers to consign their rubber to a European firm and, although not selling outright at the time, they obtained an advance of 80 per cent of the value of the consignment on undertaking to sell the rubber to the firm within a fortnight, three weeks, or a month. With the 80 per cent advance the Chinese dealer could then buy more rubber and consign it to the go-down of an exporting firm and draw 80 per cent on the second consignment.

In this way a dealer with a capital of $5,000 could speculate in rubber to the extent of $20,000. The small dealer was therefore gambling with money lent by the firm of exporters. If he won and got a better price than that obtaining when he made his consignment, he did so at the expense of the very people who had financed him. In some cases dealers started without any capital at all. They got the rubber on consignment from the producers, sent it to a European exporting firm, and without even touching the rubber, received their advance from the exporter and out of this paid the producer.

The dealers had had a strong organization of their own once and were able to dictate terms to the European exporter. But the head offices of the European firms at Singapore had given instructions to their branches to take a stand against the dealers. As a result, the Chinese dealers are now talking of shipping rubber to Singapore themselves with the idea of forcing the hands of the local agencies and making them reconsider the old terms. They might even be able to export direct to London, New York, and Germany.

Some of the bigger Chinese firms agree with the European exporters, but the majority are in favor of the old "trust system." If the Europeans persist in their present stand, the Chinese will have to find some way out and will probably start a selling agency of their own.

Company News

The Gula-Kulumpong Rubber Estates, Ltd., expects a rubber crop of 1,800,000 pounds for 1929. They have already sold forward out of this 537,000 pounds at a price equivalent to 1 shilling 2⅜ pence per pound, London delivery terms. In the course of his speech, the chairman called attention to what he termed the misleading practice of referring to the working and profits of rubber as all-in cost per pound, in comparison with sale prices, which has given investors and consumers both in England and America a wrong idea of profits.

If a company published a statement that its all-in cost was 8 pence per pound and that the selling price had been 1 shilling, the obvious inference was that the firm was making a profit of 50 per cent. But that is not so. The average yield of existing rubber estates over a period of years is not more than 350 pounds per acre planted; this yield at 4 pence per pound profit is £5, 16 shillings 8 pence per acre. If the cost per fully equipped acre, including compound interest during development, is taken at £100, it is quite evident that the profit is nearer 5 per cent.

The New Serendah Rubber Co., Ltd., has a planted acreage amounting to 1,402 and 210 acres of budded rubber interplanted with selected seed. Of this latter, 110½ acres, planted in 1920, were experimentally tapped in 1927, but owing to poor results obtained and the wintering season ahead, further tapping was postponed for another year. However results of tapping in January were not very satisfactory because of the early wintering season, it is thought.

Connemara United. A little while ago mention was made of the proposed amalgamation of Connemara, Ltd., Allenby Rubber Co., Ltd., Kundong Rubber Co., Ltd., and Balgownie Rubber Estates, Ltd., under the name of Connemara United. However, the very large number of dissenters led to a withdrawal of the merger proposals.

Pilmoor Estates reports that experiments with bud grafting are progressing favorably. In 1924, 10 acres were set aside for the experiments, undertaken by the research staff of the Rubber Growers' Association. Work in this direction has since been taken over by the Malayan Government. Various clones have been tapped by way of experiment and three outstanding clones have been chosen for further propagation. From the latter a part of a newly planted area of rubber covering 414 acres has been successfully bud grafted. Seeds from the superior trees are now also being planted experimentally.

Devon Estates (Malacca) Ltd., in its report which covers the period July-December 1928, shows a profit of £206,688. This was made possible by low working costs of the Malacca estates and favorable forward contracts. For 1929 the forward sales cover 625 tons, which is more than half the crop it is expected to harvest at an average price of 1 shilling, 1 pence per pound. Bud grafting has been carried out

on 400 acres on the Semantan Estate and is progressing satisfactorily. The company has also established an isolated garden of 10 acres for future supplies of improved strain seed, also multiplication nurseries of the best Sumatra and Malayan clones for future supplies of bud wood. Fifty trial clone groups have been budded from the best Devon trees, of which the highest yields 83 pounds per annum and the lowest 30 pounds per annum. 200 acres are being felled this year and if conditions are favorable, it is planned to open up 300 acres more next year.

NETHERLANDS EAST INDIES

Mildew and Spraying

Owing to the interest in the mildew question, leading to lengthy and frequent discussion of the subject, and the fact that in these discussions it frequently appears that conceptions regarding the problem vary considerably, a brief and clear outline of the situation has been made by J. W. Folkersma and published in a recent issue of *De Bergcultures*.

During recent years, mildew is appearing fairly generally on Hevea to a greater or lesser extent. There are good indications showing that mildew on Hevea can be dealt with by spraying with sulphur powder. There is a spraying apparatus with large capacity according to the new Bjorklund system. At present there are not enough data concerning the necessary frequency of spraying to keep the trees perfectly clear of mildew, and it is necessary to make tests concerning this.

If the tests succeed, rubber trees will no longer lose their young leaf and the full development of foliage will once more be obtained and maintained. To decide the question whether the retention of healthy foliage will have a favorable influence on rubber yields or whether mildew is a harmless disease which has no effect on the general health of the tree, tests will have to be made.

The test to determine the frequency of spraying will lead to a certain calculation of costs. The test to determine the effect of mildew on the health of the tree may take years and will lead to a negative or positive result. If it is proved that the productivity of Hevea is adversely affected by mildew and consequently that mildew has a harmful effect on the health of the tree, then fighting mildew becomes necessary even if the costs involved are higher than the advantages to be obtained from any increase in output.

For the time being no other tests are necessary, though later on, according to the results of these tests, others would have to be instituted to make the combating of the disease as effective and cheap as possible.

Rubber Preparation

From data collected by the various experiment stations in the Netherlands East Indies, each for its own district, the Experiment Station for Rubber has compiled a *Review of Rubber Preparations in* 1928, from which the following has been culled:

Keen interest continued to be shown in improved systems of latex strainers. Tests with the strainers already in use were continued; certain new types were introduced.

Formic acid maintains its position as chief coagulant; acetic acid is now used on only a few estates, those that thought that the use of formic acid attacked the material of the rolls, the iron of the buildings, etc., to a greater degree, went back to the use of acetic acid and complaints regarding the bad effects of formic acid ceased.

Sodium silicofluoride is not being used in Java, but it is employed on a few estates in East Coast of Sumatra.

Some estates use para-nitrophenol to disinfect sheets, but in general sheets prepared according to standard methods are not very susceptible to mold. In the year under review, a new disinfectant, Mouldex, appeared on the market.

Suppliers continue to improve rubber mills, and very fine mills with the newest improvements, as ball bearings, are now easily obtainable. In addition, very wide mills now appear on the market so that it now is possible to prepare crepe of the width of the cases, just as is done for sheet.

Since all crepe mills must be furnished with safety devices after January, 1929, inventors have been busily engaged in devising suitable constructions, and there are now some good, simple systems on the market.

Small mills, with a diameter of 15 cm. continue to give satisfaction in the preparation of sole crepe. Pressing with heavy crepe mills, as was formerly practised, has been found to be superfluous. The low prices prevailing during the year caused a renewal of interest in sole crepe, thus Java produced roughly 235 tons of sole crepe, in 1928 against 148 tons in 1927.

Much activity was shown in the preparation of certificate rubber—rubber with uniform vulcanization properties—owing to a test that was on hand with a big European firm. In connection with this test, 16 estates took up the preparation of certificate rubber in 1928 against only 3 in 1927. The total amount of certificate rubber supplied by 6 estates was 504 tons in 1928.

The open market continued to insist on rubber being packed in cases. Americans urged the general use of rubber wrapping sheets as a protective measure in packing rubber. This method has not been enforced, although it has for years been specially recommended to estates.

In 1928 there were 1,282 tons of rubber shipped and packed in mats. A considerable quantity went direct from estates to factories packed in bales covered with sacking.

Exports of latex from Java and South Sumatra came to 230 tons in 1928 as compared with 20 tons in 1927. From the rest of Sumatra, the shipments totaled 3,890 tons, against 234 tons in 1927, a very heavy increase. Free shipments of latex were preserved with ammonia.

CEYLON

A review of the past year's work of the Rubber Research Scheme of Ceylon was presented by the acting chairman Dr. W. Small. Budding and selection work, which he pointed out was probably the most important matter before planters at present, had been progressing on the Nivitigalakele Experiment Station. While the budding results of the 1926 clearing had been disappointing, the work in the 1927 clearing had been more successful. The work undertaken includes the testing of clones of budded plants, investigation of the relationship between scion and stock, and the development of a large bud wood nursery. At the same time efforts are being made to record accurate data concerning high-yielding Ceylon trees which are being used or will be used as mother trees.

Brown bast continues to attract attention and useful work in its treatment is being done. It has been found that the scraping involved in the treatment induces satisfactory bark renewal and in some cases even seems to improve bark renewal. An experiment is therefore being planned to discover whether scraping can be made use of in estate practice to improve renewal.

Sodium silicofluoride was investigated as a coagulant and further tests of paranitrophenol as a preventive of spots and molds of crepe rubber gave satisfactory results. It was shown that sole crepe could be made in Ceylon by the Malayan method. In the Ceylon method, the thin plies for building up the sole crepe are prepared by reworking the lace crepe after drying. In the Malayan method, this is done directly from the coagulum and the thin plies after being dried, are pressed together to give the required thickness.

Malayan sole crepe is usually considered to be superior to the Ceylon product as it is smoother in texture and when the edge of the sheet is examined, the different plies cannot be distinguished, and the product obtains a higher price. Ceylon sole crepe has a well-established market for sports shoes, but otherwise the demand for this article is rather limited. Tests were carried out by T. E. H. O'Brien, research scheme chemist, on the manufacture of sole crepe in Ceylon by the Malayan method and samples were submitted to Major Eaton of the Rubber Research Institute of Malaya, who considered that they were up to the Malayan standard.

It is interesting to note with reference to the use of cover crops in Ceylon that while there is some extension in their employment, their use here is by no means universal.

The acting chairman referred to the possibility of a reorganization of the Ceylon Rubber Research Scheme during 1929. An ordinance which will substitute for the present voluntary membership of the scheme, an arrangement whereby all rubber producers will become participators in the scheme through a cess on exports, will be put before the legislative council and it is hoped that the passing into law of the ordinance will have the effect of extending the work and the activities of the Rubber Research Scheme.

Rubber Patents, Trade Marks and Designs

Machinery Patents

United States

1,711,556.* TUBE WRAPPING LATHE. A simple economical and efficient form of apparatus which selectively and successively presents straight inner tube mandrels to a wrapping position in the machine, rotates them, and discharges the wrapped mandrel without danger of damage to the uncured tube.—W. C. Bleher, F. E. Willis, and R. A. Wentworth, assignors to Hood Rubber Co., all of Watertown, Mass.

1,711,557.* MANDREL CONVEYOR. This apparatus is one by which mandrels or poles bearing uncured inner tubes are conveyed from the station or stations where the tubes are straight wrapped, to a device for cross-wrapping them prior to vulcanization.—W. C. Bleher, F. E. Willis, and R. A. Wentworth, assignors to Hood Rubber Co., all of Watertown, Mass.

1,712,335.* INNER TUBE MACHINE. This invention provides a method of manufacturing molded inner tubes, having relatively uniform thicknesses at the outer and inner portions, by employing continuous strips of stock having uniform thicknesses.—B. C. Eberhard, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,712,618.* CLINCHER BEAD FLIPPER. This provides a machine for automatically folding a fabric flipper strip about a bead filler of the clincher type, having a reentrant strip with smooth and continuous binding contact with the bead. —E. Hutchens, Milwaukee, Wis.

1,713,658.* TIRE CASING MACHINE. An apparatus which will positively locate an air bag or other flexible member within a flatband built tire casing so that the tire when removed from its shaping apparatus will retain its shape due to its contained air bag.—E. Hopkinson, New York, N. Y.

*Pictured in group illustration.

1,713,927.* TIRE MACHINE. In this machine for making drum-built tires the rotating drum is made to roll lengthwise over a series of strips of material arranged on a suitable support, so as to successively wind the strips around the drum, thereby assembling the parts of a tire casing in a simple operation. —D. M. Shelton, Webster Groves, assignor to Cupples Co., St. Louis, Mo.

1,713,958.* TUBE MAKING MACHINE. This invention supplies means for performing certain steps in the manufacture of inner tubes as a continuous operation. This is accomplished by positioning an automatic apparatus to cooperate with sheet-forming rolls for the production of plied-up tubes.—J. A. Fleischli, Clayton, and J. M. Kountzman, assignors to Cupples Co., both of St. Louis, all in Mo.

1,713,969.* MIXING MACHINE. A rubber mixing or masticating device comprising a mixing chamber within which the batch of material to be treated is placed and a rotor or rotors within the chamber to mix and knead the material.—R. C. Lewis, assignor, by mesne assignments, to Farrel-Birmingham Co., both of Ansonia, Conn.

1,714,618.* BOOT-LEG COVER MACHINE. This is designed to encase a boot-tree with a previously assembled blank which is to constitute a boot-leg. It also provides a means for sealing the seam of the boot-leg.—E. L. Patten, assignor to L. Candee & Co., both of New Haven, Conn.

1,715,964.* V-BELT MACHINE. This comprises a rotatable drum on which the belt-building strips may be assembled in proper relation, stitched, and rolled into circular form. Means are provided for transferring the assembled belts from the building drum to a form on which the belt is to be vulcanized.—W. P. Vachon, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,711,500. DRIVE UNIT. E. Hutchens, Milwaukee, Wis.

1,711,866. MATERIAL TESTING APPARATUS. I. Williams, assignor, by mesne assignments, to The Grasselli Chemical Co., both of Cleveland, O.

1,712,264. CABLE FORMING MACHINE. J. R. Gammeter, Akron, O.

1,712,338. FABRIC MANIPULATING APPARATUS. R. D. Evans, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,713,248. TIRE RESURFACING MACHINE. J. Zimarik, assignor to The Portage Machine & Engine Co., both of Akron, O.

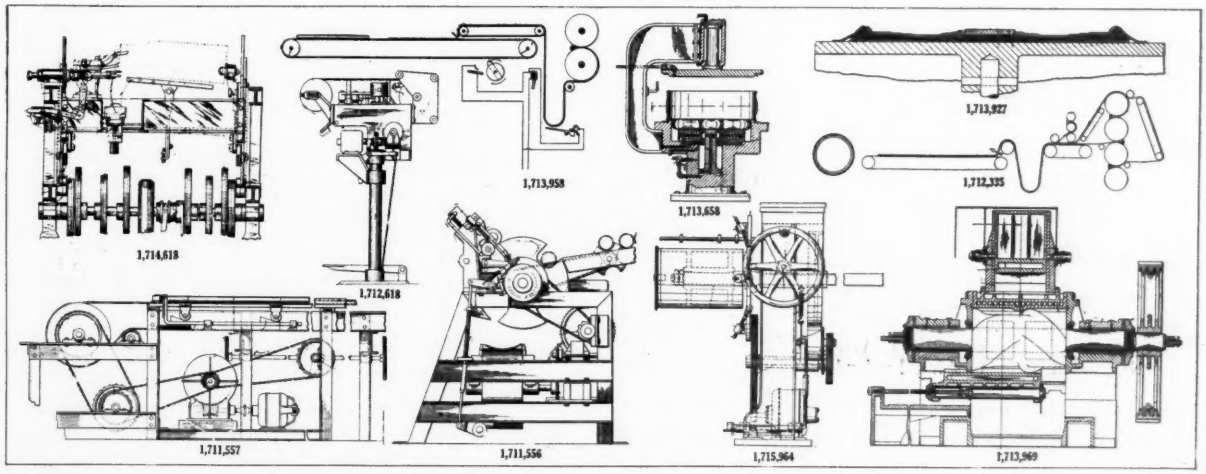
1,713,753. TIRE TESTING MACHINE. E. Eger, assignor to Morgan & Wright, both of Detroit, Mich.

1,714,016. HOLLOW ARTICLE VULCANIZER. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,714,638. TESTING MACHINE. D. C. Scott, assignor to Henry L. Scott Co., both of Providence, R. I.

1,714,799. MACHINE FOR TIRE CASINGS. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,714,832. TIRE BUILDING MACHINE. G. F. Wikle, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.



Rubber Patents, Trade Marks and Designs

1,714,848. INCORPORATING CORDS IN SHEETS. M. Castricum, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,714,994. GOLF BALL PAINTER. A. Turner, assignor to The Burke Golf Co., both of Newark, O.

1,715,224. MACHINE FOR ELASTIC GARMENTS. P. E. F. Clay, Winnipeg, Man., Canada.

1,715,644. TIRE MAKING MACHINE. H. A. Denmire, assignor to The General Tire & Rubber Co., both of Akron, O.

1,715,661. GOLF BALL APPARATUS. O. J. Kuhlke, Akron, O.

1,715,872. ROTARY CUTTER. H. D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,715,927. VULCANIZING APPARATUS. O. C. Kalbfleisch, Mansfield, O.

1,715,973. PNEUMATIC TIRE APPARATUS. A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.

1,715,987. TIME TEMPERATURE CONTROLLER. R. W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,715,988. ABSOLUTE PRESSURE GAGE. R. W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,715,995. COUNTING MECHANISM. N. H. Curtiss, assignor to Mechanical Rubber Co., both of Cleveland, O.

Dominion of Canada

289,268. VULCANIZING SWITCH. The Dunlop Rubber Co., Ltd., London, N. W. 1, assignee of H. Wilshaw, W. A. Davis, and H. Smith, Birmingham, Co. of Warwick, all in England.

289,286. TIRE FORMING MACHINE. The Goodyear Tire & Rubber Co., assignee of R. S. Kirk, both of Akron, O., U. S. A.

289,287. GUM-STRIPPING MACHINE. The Goodyear Tire & Rubber Co., assignee of J. A. Shively, both of Akron, O., U. S. A.

289,288. RUBBER MOLD. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

289,289. TIRE TUBE. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

289,291. MOLD. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

289,293. TREAD APPLIER. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

289,451. GOLF BALL CLEANER. J. C. Wilson, Nanpantan, Leicestershire, England.

289,480. MOLD. The Hood Rubber Co., assignee of L. J. Schroeder, both of Watertown, Mass., U. S. A.

289,712. RUBBER MOLDING APPARATUS. J. F. and E. E. Allen, J. A. Himrod, co-inventors, all of Erie, Pa., U. S. A.

289,827. COVERED ELASTIC STRAND. Everlastik, Inc., Chelsea, assignee of L. B. Chisholm, Stoneham, both in Mass., U. S. A.

United Kingdom

307,107. TIRE REMOVER. W. H. Welch, 182 Ashley Down Rd., Bishopston, Bristol.

307,315. CONCENTRATING LATEX. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, D. F. Twiss and E. A. Murphy, Fort Dunlop, Birmingham.

307,332†. TIRE. The Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, assignee of R. E. Jenkinson, Box 205, Stow, both in O., U. S. A.

307,541. HEEL TRIMMING MACHINE. British United Shoe Machinery Co., Ltd., and J. H. Brown, Union Works, Belgrave Rd., Leicester.

307,585. ELECTROLYSIS. Anode Rubber Co., Ltd., 10 Lefebvre St., St. Peters Port, Guernsey.—(S. E. Sheppard and C. L. Beal, Kodak Park, Rochester, N. Y., U. S. A.)

307,789†. MOLD. Morgan & Wright, Belleview Ave., Detroit, Mich., assignee of E. Hazell, 12 Bank St., New York, N. Y., both in the U. S. A.

307,790†. MOLD. Morgan & Wright, Belleview Ave., Detroit, Mich., assignee of W. A. Gibbons, 357 Park St., Montclair, N. J., both in the U. S. A.

307,791† and 307,792†. MOLD. Morgan & Wright, Belleview Ave., Detroit, Mich., assignee of A. W. Keen, 311 Raymond St., Hasbrouck Heights, N. J., both in the U. S. A.

307,897† and 307,898†. VULCANIZING APPARATUS. Firestone Tyre & Rubber Co. (1922), Ltd., 216 Tottenham Court Rd., London, assignee of R. W. Brown, 636 Storer Ave., Akron, O., U. S. A.

308,083. SOLE AND HEEL ATTACHING. Gimson Shoe Machinery Co., Ltd., and W. J. Keily, Ulverscroft Works, Ulverscroft Rd., Leicester.

308,209†. EXTRUSION MACHINE. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, assignee of C. S. McChesney and H. H. Clark, Kenmore, N. Y., U. S. A.

308,364†. INNER TUBE VULCANIZER. National Rubber Machinery Co., Akron, O., assignee of P. de Mattia, Wellington St., Clifton, N. J., both in the U. S. A.

308,570†. WEB-FEEDING MACHINE. The Goodyear Tire & Rubber Co., 1144 East Market St., assignee of J. I. Haase, 459 Noah Ave., both of Akron, O., U. S. A.

308,586†. VULCANIZING PRESS. J. R. Gammeter, 680 North Portage Path, Akron, O., U. S. A.

†Not yet accepted.

Germany

476,291. MOLD. New York-Hamburger Gummi-Waaren Compagnie, Hamburg.

476,704. DRUM FOR PRODUCING COVERS. Continental Caoutchouc und-Gutta-Percha Compagnie, Hannover.

Designs

1,071,205. TUBE VULCANIZER. Max Muller, Maschinen-und-Formenfabrik, Hannover-Hainholz.

1,072,001. BELT VULCANIZER. Max Muller, Maschinen-und-Formenfabrik, Hannover-Hainholz.

Process

United States

1,712,335. INNER TUBE MANUFACTURE. B. C. Eberhard, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,713,135. HEEL BLANK SHEET. H. Lavinthal, Trenton, N. J.

1,713,216. PLAYING BALL MANUFACTURE. W. L. Childs, Evanston, Ill.

1,713,637. ELASTIC STRAP. M. N. Aaron, assignor to Friedberger-Aaron Mfg. Co., both of Philadelphia, Pa.

1,713,746. IMITATION LEATHER. C. H. Dennison, Quincy, assignor to American Rubber Co., East Cambridge, both in Mass.

1,713,755. PLAY BALL ASSEMBLY. F. W. Gibson, Chicopee, Mass., assignor to A. G. Spalding & Bros., New York, N. Y.

1,714,943. ATTACHING COMPOSITION SOLES. O. Brockman, Louisville, Ky.

1,714,999. CUSHION TIRE. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

Dominion of Canada

289,187. HEEL. H. Lavinthal, Trenton, N. J., U. S. A.

289,294. TIRE CASING. The Goodyear Tire & Rubber Co., assignee of W. C. State, both of Akron, O., U. S. A.

289,491. ORNAMENTAL SURFACE COVERING. The W. & J. Sloane Mfg. Co., New York, N. Y., assignee of J. Tomec, Trenton, N. J., both in the U. S. A.

United Kingdom

306,725. CUSHION TIRE. J. F. Cullen 222½ Sixth St., Portland, Ore., U. S. A.

306,929†. PNEUMATIC TIRE REPAIRING. Goodyear Tire & Rubber Co., 1144 East Market St., assignee of C. H. Zimmerman, 1089 Berwyn St., both of Akron, O., U. S. A.

307,341†. ELECTRIC CABLE. Electrical Research Products, Inc., 195 Broadway, New York, N. Y., assignee of A. R. Kemp, 170 Lexington Ave., Westwood, N. J., both in the U. S. A.

307,628. VULCANIZING BY ELECTRICITY. C.

Macintosh & Co., Ltd., and H. W. Wolton, 2 Cambridge St., Manchester.

307,743†. COMPOUNDING RUBBER. Thermatomic Carbon Co., 108 Ferry St., assignee of E. B. Spear, both of Pittsburgh, and R. L. Moore, Mt. Lebanon, all in Pa., U. S. A.

Chemical Patents

United States

1,712,333. COMPOUNDING RUBBER. A master batch is made by mixing an emulsion of rubber with a suspension of filler material, and coagulating the rubber on the filler material. The product is next washed free from water soluble material, a rubber softener is added while the mass is still highly pasty, and it is then incorporated into a rubber mix upon a mill.—R. P. Dinsmore, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,712,968. ACCELERATOR. The process of manufacturing mercapto-benzo-thiazole, which comprises heating together substantially equi-molecular proportions of thiocarbanilide, sulphur, and carbon bisulphide in a container maintained under the pressure developed by the gases and vapors evolved in the reaction at a maximum temperature of about 275° C.—H. P. Roberts and H. A. Merkle, Nitro, W. Va., assignors to Rubber Service Laboratories Co., Akron, O.

1,714,033. GASKET. Rubber gaskets are treated by dipping them in a bath of paraffine wax heated from 200 to 250° F.—H. C. Loudenbeck, Wilkinsburg, assignor to Westinghouse Air Brake Co., Wilmerding, both in Pa.

1,714,835. RECLAIMING PROCESS. The process comprises treating the rubber with a hydrogenated naphthaline rubber solvent containing dissolved therein a substance having a strong affinity for sulphur.—Tatsuichi Yokoyama, Tokyo-Fu, Japan.

1,714,919. TIRE DRESSING. James S. Motter, Milwaukee, Wis.

1,715,209. RUBBER PRINTING INK. H. N. Morris, Manchester, England.

Dominion of Canada

289,143. MUCILAGE. Rubber dissolved in di-tri-per-tetra, or penta-chlor-ethane, or carbon chlorides, to form a paste of great cementing power.—Henning-Orla Bruhn, Copenhagen, Denmark.

289,166. EMULSION. A method which consists in agitating an oil with a dispersion agent comprising the soap of a metal whose hydroxide is soluble in an ammonia base and a solution containing such a base.—C. J. J. Fox, Woking, Surrey, England.

289,277. VULCANIZATION PROCESS. I. G. Farbenindustrie A. G., Frankfort-on-Main, assignee of E. Tschunkur, Köln-Mülheim H. Meis, Leverkusen-on Rhine, and F. Loeblein, Elberfeld, all in Germany

289,284 and 289,285. PRESERVING AIRBAGS. Preparations of glycerine, rape seed oil, and an emulsifying agent.—Both in favor of Goodyear Tire & Rubber Co., assignee of S. S. Kurtz, Jr., and G. D. Mallory, respectively, all of Akron, O., U. S. A.

289,290. RUBBER RECLAIMING. A method comprising heating under positive pressure, ground vulcanized rubber compound and a softening oil in the presence of oxygen.—Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

289,292. ANTIOXIDANT.—Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.

289,477, 289,478 and 289,640. SYNTHETIC RUBBER.—I. G. Farbenindustrie A. G., Frankfort-on-Main, assignee of E. Tschunkur, Köln-Mülheim, and W. Bock, Köln-Glittard, all in Germany.

289,701. DUSTING MATERIAL,—L. and I. Dorogi, Dr. Dorogi, Tarsa Gummigyar R. T., assignee of half interest, Budapest-Albertfalva, all in Hungary.

289,705. COAGULATING LATEX. H. H. Beckwith, Brookline, assignee of F. O. Woodruff, Quincy, both in Mass., U. S. A.

United Kingdom

306,621. COMPOUNDING LATEX. Finely divided fillers such as gas black are dispersed in an aqueous or slightly alkaline solution of cellulose xanthate for incorporation in rubber dispersions such as latex which may be vulcanized.—Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, and R. C. Davies, Fort Dunlop, Birmingham.

306,864. ADHESIVE SOLUTION.—H. O. Bruhn, 93 Store Kongensgade, Copenhagen, Denmark.

306,994. COMPOUNDING LATEX. Cellulose xanthate gel is added to rubber, latex, or aqueous dispersions of rubber with agitation or stirring until the mixture creams and becomes viscous.—Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, and R. C. Davies, Fort Dunlop, Birmingham.

307,013.† ANTIOXIDANT.—Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.

307,056.† ATTACHING RUBBER TO METALS.—Goodyear Tire & Rubber Co., Akron, O., assignee of S. S. K. Junior, Philadelphia, Pa., both in the U. S. A.

307,087. INSULATION FOR CABLES.—W. S. Smith, Newton Poppleford, Devon; H. J. Garnett, Solefields, Kent, and H. C. Channon, Kensington, London.

307,134. ISOMERIZING RUBBER.—A. E. White, 88 Chancery Lane, London; B. F. Goodrich Co., New York, N. Y., U. S. A.

307,155. RUBBER COMPOSITIONS.—Imperial Chemical Industries, Ltd., Broadway Buildings, Westminster; A. J. Hailwood, W. J. S. Naunton, and A. Shepherdson, Crumpsall Vale Chemical Works, Blackley, Manchester.

307,180. ATTACHING RUBBER TO METAL.—Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London; E. A. Murphy and D. F. Twiss, Fort Dunlop, Birmingham.

307,308.† SYNTHETIC RUBBER.—I. G. Farbenindustrie A. G., Frankfort-on-Main Germany.

307,375. SYNTHETIC RUBBER.—J. Y. Johnson, 47 Lincoln's Inn Fields, London; I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

307,390. PURIFYING GUTTA PERCHA.—W. S. Smith, Newton Poppleford, Devon; H. J. Garnett, Solefields, Kent, and H. C. Channon, Kensington, London.

307,435.† CARBON PAPER INK.—G. Wagner. 292 Podbielski St., Hannover, Germany.

307,466.† COMPOSITION.—K. Winkler, Altstetten, near Zurich, Switzerland.

307,731.† RUBBER CEMENT. A suitable adhesive for attaching rubber to leather, etc., consists of a mixture of hevea latex and a latex of high resin content such as jelutong.—Nederlandsche Guttas Percha Maatschappij, The Hague, Holland.

307,742.† SEALING COMPOSITION.—Dewey & Almy Chemical Co., assignee of C. H. Egan and W. I. McGowan, all of North Cambridge, Mass., U. S. A.

307,747.† ELECTRIC ENDOSMOSIS OF RUBBER.—Siemens & Halske A. G., Siemensstadt, Berlin, Germany.

307,808. SYNTHETIC RUBBER.—J. Y. Johnson, 47 Lincoln's Inn Fields, London; I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

307,830,† 307,879,† and 307,912.† RUBBER ELECTROLYSIS.—Siemens-Elektro-Osmose Ges., Berlin, Germany.

307,937† and 307,938.† SYNTHETIC RUBBER.—I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

307,966. ELECTRIC INSULATION.—W. E. Beatty, Bush House, Aldwych, London; Bell Telephone Laboratories, Inc., New York, N. Y., U. S. A.

308,249.† ANTIOXIDANT. Amino azo hydrocarbons.—Goodyear Tire & Rubber Co., Akron, assignee of J. Teppema, Twin Oaks, both in O., U. S. A.

308,275.† ACCELERATOR.—I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

308,504. FLOOR, ROOF, OR WALL COVERING.—M. H. Tate, Perth, Western Australia.

Germany

476,998. PREPARING RUBBER. Arnold Rudolf Frans van der Mark, Weltevreden,

†Not yet accepted.

Rubber Patents, Trade Marks and Designs

Rubber Patents, Trade Marks and Designs

and Hein Kremer, Meloewoeng, Netherlands East Indies. Represented by H. Nähler, F. Seemann, and E. Vorwerk, Berlin, S. W. 11.

General

United States

May 7, 1929*

1,711,845. FOUNTAIN PEN. W. A. Hartline, Midland, Mich.

1,712,003. PACKING. C. R. Hubbard, Newark, assignor to The Garlock Packing Co., Palmyra, both in N. Y.

1,712,098. NECKWEAR. W. E. Webb, Larchmont, N. Y.

1,712,265. BLOW-OUT BOOT. W. Gilbert, St. Louis, Mo.

1,712,304. FOUNTAIN PEN. F. J. Kristofek, assignor to Brown & Bigelow, both of St. Paul, Minn.

1,712,361. ICE BAG CLOSURE. A. R. Soderquist, Idaho Falls, Idaho.

1,712,420. SLIPPER INSERT. A. Carlson, Princeton, Ill.

1,712,472. DOOR AND CUSHION. A. S. Campbell, Winchester, assignor to A. S. Campbell Co., East Boston, both in Mass.

May 14, 1929*

1,712,603. RECESSED PACKING. G. Christenson, North Plainfield, N. J.

1,712,655. SWIMMING APPLIANCE. A. F. Fibiger, assignor of one-tenth to H. H. Phipps and E. J. Edwards, all of Spokane, Wash., and five-tenths to C. Fibiger, trustee, Detroit, Mich.

1,712,965. LAMINATED BOARD. A. G. Maranville, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,713,187. FOUNTAIN PEN. E. C. Loetscher, Dubuque, Iowa.

1,713,364. TUBING OIL SAVER. P. Arbon, Tulsa, Okla.; Fidelity National Bank & Trust Co., Kansas City, Mo., and L. M. McLeod, Tulsa, Okla., executors of said P. Arbon, deceased, assignors to Paul Arbon & Co., Tulsa, Okla.

May 21, 1929*

1,713,611. FLEXIBLE GAITER. C. R. Little, Coventry, assignor to H. Lord, Earlsdon, both in England.

1,713,716. INSULATED CONDUCTOR. H. D. Saylor, Newark, assignor to Driver-Harris Co., Harrison, both in N. J.

1,713,733. SWIMMING DEVICE. A. E. Anderson, assignor to Airubber Corp., both of Chicago, Ill.

1,713,751. THIN-WALLED RUBBER ARTICLE. I. and L. Dorogi, Budapest, assignors of one-half to Dr. Dorogi Es Tarsa Gummigyar R. T., Budapest-Albertfalva, all in Hungary.

1,713,756. HEAD MASSAGING DEVICE. R. H. Hassler, Indianapolis, Ind.

1,713,871. TIRE BEAD REENFORCEMENT. A. C. Hopkins, assignor to National Standard Co., both of Niles, Mich.

1,713,895. TUBE CLEANER. E. B. Ford, Unionville, N. J.

1,713,937. MEDICINE DROPPER. C. G. Wheeland, San Francisco, Calif.

1,714,130. VEHICLE CUSHION CONNECTION. F. L. Lipcot, New York, N. Y., assignor, by mesne assignments, to The Rubber Shock Insulator Corp., Wilmington, Del.

1,714,241. NURSING BOTTLE NIPPLE. C. J. Reilly, assignor of one-third to E. B. Norman and one-third to E. S. Butler, all of New Orleans, La.

1,714,446. RUBBER HEEL. N. B. Riddle, St. Francisville, La.

May 28, 1929*

1,714,558. INFLATED TOY. F. Hauff, assignor of one-half to J. D. Slater, both of Akron, O.

1,714,687. SANITARY BATH DEVICE. C. E. McKeag, Los Angeles, Calif.

1,714,714. RUBBER HEEL. J. R. Gammeter, Akron, O.

1,714,733. HOLLOW FLOAT. McC. Shank, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,714,757. NURSING BOTTLE NIPPLE. R. G. A. Beck, Montreal, P. Q., Canada.

1,714,995. TREAD STOCK. W. B. Wescott, Dover, assignor to Rubber Latex Research Corp., Boston, both in Mass.

1,715,120. OVERSHOE. E. H. Costellow, assignor to Philips-Baker Rubber Co., both of Providence, R. I.

1,715,147. GAITER. H. C. Porr, New York, N. Y., assignor to The Goodyear's India Rubber Glove Mfg. Co., Naugatuck, Conn.

June 4, 1929*

1,715,482. KNIT FABRIC. T. G. Vorck, Barmen, Germany.

1,715,523. AUTOMOBILE FLOOR COVERING. W. S. Turner, Detroit, Mich., assignor to The Paine & Williams Co., Cleveland, O.

1,715,525. AUTOMOBILE FLOOR COVERING. W. S. Vrooman, assignor to The Paine & Williams Co., both of Cleveland, O.

1,715,626. HEEL ASSEMBLY. C. Roberts, Reigate, England, assignor, by mesne assignments, to United Shoe Machinery Corp., Paterson, N. J.

1,715,944. ELASTIC SEAL. E. L. Oliver, Piedmont, Calif., assignor to Oliver-Sherwood Co., a corporation of Calif.

1,716,219. GLASS-RUN CHANNEL. H. W. Fauver, Detroit, Mich.

1,716,300. VEHICLE FENDER. W. C. Broadwell, Brooklyn, N. Y.

1,716,311. TIRE FOR CASTERS. V. F. Harris, assignor to Harris & Reed Mfg. Co., both of Chicago, Ill.

1,716,346. OVERSHOE. R. L. Rice, Brookline, assignor to Hood Rubber Co., Watertown, both in Mass.

Dominion of Canada

April 30, 1929

289,201. AUTOMOBILE BUMPER. J. W. Postel, Palisade, N. J., U. S. A.

289,224. PNEUMATIC TIRE. S. Vidal-Topete, Davos-Platz, Switzerland.

289,361. SUBMARINE CABLE INSULATION. The Western Electric Co., Inc., assignee of the International Western Electric Co., Inc., both of New York, N. Y., assignee of R. R. Williams, Roselle, and A. R. Kemp, East Orange, both in N. J., all in the U. S. A.

May 7, 1929

289,441. TRAFFIC SIGNAL. W. M. Rand, Vancouver, B. C.

289,443. INFLATABLE BAG. S. G. Sahagian, Pocahontas, Va., U. S. A.

289,448. SURFACE PATTERNING DEVICE. H. Vieck, Hamburg, Germany.

289,508. HEEL. The United Shoe Machinery Co. of Canada, Ltd., Montreal, P. Q., assignee of J. B. Hadaway, Swampscott, Mass., U. S. A.

May 14, 1929

289,544. TIRE VALVE AND CAP. D. Birnie, Winnipeg, Man.

289,602. SOAP DISH. W. Vernet, New York, N. Y., U. S. A.

May 21, 1929

289,737. WINDOW HOLDER. J. Davies, Oshawa, Ont.

289,779. HEEL PROTECTOR. E. E. Smart, Mineral Wells, Tex., U. S. A.

289,787. WATERPROOF STOCKING PROTECTOR. R. Vrabek, New York, N. Y., U. S. A.

United Kingdom

April 24, 1929

306,713. BRUSH. W. H. Phipps, 12 Waverley Rd., Redland, and G. I. Fry, 19 Oakfield Rd., Clifton, both in Bristol.

306,806†. TREAD BAND. J. B. H. Jessen, 35 Vaucluse Rd., Vaucluse, Sydney, Australia.

306,850†. FOOTWEAR. M. Wissaert, 240A, Chaussee de Ninove, Brussels.

306,901†. TIRE ALARM. Michelin Et Cie, Clermont-Ferrand, Puy-de-Dome, France.

306,954†. STOCKING SUSPENDERS. W. and M. Vorwerk, and G. Bremecker (trading as Vorwerk & Sohn), 34 Kleiner Werth, Barmen, Germany.

May 1, 1929

307,125. UPHOLSTERY TRIMMINGS. E. Benest, 7 Buckingham Ave., Whetstone, London.

307,154. RAILWAY VEHICLE. G. Spencer, Moulton & Co., Ltd., and A. Spencer, 2 Central Bldgs., Westminster.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

†Not yet accepted.

307,294†. GALVANIC BATTERY. Accumulatoren-Fabrik Akt.-Ges., 3 Askanischer Platz, Berlin, Germany.

307,297†. OFFSET PRINTING ROLLER. Masa Ges. Zur Herstellung Kunstlicher Oberflächen, 4 Alexanderufer, assignee of Dr. Ing. Koch & Kienzle, 9 Margaretenstrasse, both in Berlin, Germany.

307,429†. ELECTRIC CABLE. Siemens-Schuckertwerke Akt.-Ges., Siemensstadt, Berlin, Germany.

307,517. AUTOMOBILE MUDGUARD. H. D. Dewes, 55 Corporation St., Belfast, and J. Dunlop, 11 Bothwell St., Glasgow.

307,604. HORSESHOE PAD. P. H. Wilkinson, Shoeing Forge, Cawthorne, near Barnsley, and H. Speight, Wharncliffe St., Shoeing Forge, Barnsley.

307,617. ELECTRIC CABLE. C. J. Beaver, Bell Place, Stamford Rd., Bowden, Cheshire, and W. T. Glover & Co., Ltd., Trafford Park, Manchester.

307,626. SOLE. W. Crick, 218 Abington Ave., Northampton.

May 8, 1929

307,651. ELECTRIC CABLE. J. McCallum, 16 Calderwood Rd., Newlands, Glasgow.

307,734†. ELECTROSTATIC TRANSMITTER. Newcombe-Hawley, Inc., St. Charles, assignee of C. Kyle, c/o Riverbank Laboratories, Geneva, both in Ill., U. S. A.

307,754†. COIN-FREED TIRE PUMP. J. Goebel, Diestedde, Westphalia, Germany.

307,755†. MATTRESS. Soc. Belge Du Caoutchouc Mousse, 428 Chaussée de Gand, Berchem-St.-Agathe, Belgium.

307,862. FILLER FOR BOOTS. E. C. R. Marks, 57 Lincoln's Inn Fields, London. —(Jacobius & Glückauf Akt.-Ges., 19 Spandauerstrasse, Berlin.)

308,059. MOTOR-CYCLE KNEE GRIP. Universal Rubber Paviors, Ltd. and L. Gaisman, Canning St., Audenshaw, near Manchester.

308,067. FLEXIBLE SHAFT COUPLING. J. & A. Hillman, Ltd., Castle Leather Works, Trindle Rd., Dudley, Worcestershire, and C. Macbeth, 67 Norwich Union Chambers, Birmingham.

308,082. ENDLESS-BELT CONVEYER. C. J. Cuthbertson, City Mills, High St., Stratford, London.

308,125. FLUSHING VALVE. F. W. Starkey, 1056 Wagner Ave., Philadelphia, Pa., U. S. A.

308,133. SOLE. A. A. Glidden, 65 Adams Ave., and T. M. Knowland, 76 Bradford Rd., both in Watertown, Mass., U. S. A.

308,157. BOOT-TOE PROTECTOR. E. A. Bartlett, 38 St. Olaves Rd., East Ham, London.

May 15, 1929

308,289. SHUTTLE FOR LOOMS. British Celanese, Ltd., 8 Waterloo Place, London, W. A. Diekie, and H. R. Torkington, British Celanese, Spondon, near Derby.

308,413. ELECTRIC CABLE. J. McCallum, 16 Calderwood Rd., Newlands, Glasgow.

308,553. BOOT. T. Kurata, 70 Komeya-Machi, Kurume-Shi, Japan.

†Not yet accepted.

Rubber Patents, Trade Marks and Designs

Germany

476,165. INFLATABLE BODY. Dr. I. and L. Dorogi, and Dr. Dorogi & Co., Gummifabrik A. G., Budapest-Albertfalva, Hungary. Represented by W. Fritze and Dr. E. Boas, Berlin S. W. 61.

476,574. SPONGE RUBBER MATTRESS. Ledermanufaktur Ehrenfriedersdorf Lina Zimmermann and Carl Zimmermann, Ehrenfriedersdorf.

477,208. RUBBER AND FABRIC SHOE. Firma Simon Lewkowitz, Neue Friedrichstrasse 38-40, Berlin C. 2.

477,292. FABRIC BELT. Lewis & Tyler, Ltd., and F. W. Alexander, Cardiff, Wales. Represented by M. Wagner and Dr. G. Breitung, Berlin S. W. 11.

477,301. SPONGE RUBBER MATTRESS (addition to 476,574). Ledermanufaktur Ehrenfriedersdorf Lina Zimmermann and Carl Zimmermann, Ehrenfriedersdorf.

Designs

1,070,307. HOSE. Firma Albert Ziegler, Giengen a. d. Brienz, Wurtt.

1,070,444. PERFORATED MAT. Wilhelm Pahl Dortmunder Gummiwarenfabrik Komm. Ges., Dortmund.

1,071,670. MATTRESS. A. G. Metzeler & Co., Munich.

1,071,716. HEEL. Otto Schlappig & Co., Herderstrasse 42, Düsseldorf.

1,071,914. RUBBER FABRIC. Hanseatische Gummiwerke G.m.b.H., Hamburg 27.

1,072,068. HEEL. Continental Caoutchouc- und - Gutta - Percha Compagnie, Hannover.

1,072,151. REENFORCEMENT FOR BOATS. Harburger Gummiwarenfabrik Phoenix, A.G., Harburg-Wilhelmsburg, a.d.E.

1,072,191. PNEUMATIC TIRE. Wilhelm Steinkopf, Grabow i. Meckl.

1,072,571. BAG. Georg Wicke, Bulowstrasse 11, Berlin W. 57.

1,073,310. PEN. Gertrude Moller (née Meis), Lokstedt-Niendorf, b. Hamburg.

1,073,468. RUBBER LINED VALVE. Continental Caoutchouc - und - Gutta - Percha Compagnie, Hannover.

1,073,587. RUBBER METAL SPHERE. Theodor Pfluger, Zierenbergstrasse 97, Hildesheim.

Prints

United States

11,796. A NEW PENCIL WITH A NEW FEATURE! PRESIDENT PENCIL WITH OVERSIZE RUBBER (C 83). Pencils. American Lead Pencil Co., New York, N. Y., and Hoboken, N. J.

11,797. ADDED FEATURE! AN OVERSIZE RUBBER ON THE POPULAR VELVET PENCIL (C 84). Pencils. American Lead Pencil Co., New York, N. Y., and Hoboken, N. J.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

May 7, 1929

Act of February 20, 1905

256,051. APIS—erasers of rubber or composition material. Societe Anonyme des Anciens Etablissements J. M. Paillard, Paris, France.

256,081. PARMR—solid petroleum residues and asphaltic residues and products made therefrom to be used as an ingredient in the rubber, paint, and ink industries. Binney & Smith Co., New York, N. Y.

256,148. BESTEVER KOWMAH—combs made of hard rubber or pyroxylin plastic. The Mohawk Merchandise Co., New York, N. Y.

Act of March 19, 1920

256,238. ALLAN'S—ladies' garments, including shoes made of leather, rubber, fabric, or combinations of said materials. Jonas Millinery, Inc., New York, N. Y.

May 14, 1929

Act of February 20, 1905

256,260. HANDY PANTY—babies' pants. The Baumann Rubber Co., New Haven, Conn.

256,293. Representation of a seal containing the words: "AJAX GOLD BOND"—tires and tubes. Ajax Rubber Co., Inc., New York, N. Y., and Racine, Wis.

256,294. GOLD SHIELD—tires and tubes. Ajax Rubber Co., Inc., New York, N. Y., and Racine, Wis.

256,295. Representation of a shield containing the words: "AJAX GOLD SHIELD"—tires and tubes. Ajax Rubber Co., Inc., New York, N. Y., and Racine, Wis.

256,296. GOLD BOND—tires and tubes. Ajax Rubber Co., Inc., New York, N. Y., and Racine, Wis.

256,309. Rectangle containing at each end the representation of a man tapping a rubber tree, and between these the word: "RUBBERLAND"—hot water bottles. E. G. Bieg, Los Angeles, Calif.

256,338. PARACORD—tennis shoes, overshoes, arctics, and boots. Endicott Johnson Corp., Endicott, N. Y.

256,396. GRASSELER AGER—antioxidants. The Grasselli Chemical Co., Cleveland, O.

256,398. MIRELLE — deodorant and preservative for rubber and rubber garments. I. B. Kleinert Rubber Co., New York, N. Y.

256,425. Representation of a winged dragon holding in one fore-paw a monogrammed shield on a shelf across which is a streamer containing the words:

Rubber Patents, Trade Marks and Designs

"SEMPER SURSUM"—door handles and knobs; handles for stove and oven doors; stretchers; teapots; grasping handles and grasp bars for baths and railroad cars; valves and parts thereof, spraying nozzles, siphons, cocks and faucets, pipes and pipe couplings, spigots, and outlets, all made of hard india rubber or of synthetic or other artificial resins used as substitutes for hard india rubber. Dr. Heinr. Traun & Söhne, vormals Harburger Gummi-Kamm-Compagnie, Hamburg, Germany.

256,447. THERMOID F-M-L BRAKE LINING—brake linings. Thermoid Rubber Co., Trenton, N. J.

May 21, 1929

Act of February 20, 1905

256,614. Representation of a fancy sign with a double border, which contains the word: "RANFAC"—surgical and veterinarian syringes. Randall Faichney, Inc., Boston, Mass.

256,636. PARACORD—golf and tennis balls. Endicott Johnson Corp., Endicott, N. Y.

256,639. FLYRITE—golf balls. Frederick & Nelson, Seattle, Wash.

Act of March 19, 1920

256,820. TUFTOE—boots and shoes of rubber or rubber and fabric. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.

256,843. VOGUE—dress shields. I. B. Kleinert Rubber Co., New York, N. Y.

May 28, 1929

Act of February 20, 1905

256,892. RADIUM—rubber garments. Dieckerhoff, Raffloer & Co., Inc., New York, N. Y.

256,917. REVULTEX—vulcanized or partly-vulcanized rubber latex. W. MacPherson, Cambridge, Mass.

256,935. WEARFLEX SPORT—rubber shoe soles and heels, also boots, shoes, and arctics having leather or canvas uppers and rubber soles. Endicott Johnson Corp., Endicott, N. Y.

256,939. BLACK OAK—boots and shoes made of rubber and fabric. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.

256,985. THERMAX BRAND—carbon black used for various industrial purposes, and especially for compounding with rubber. Thermatomic Carbon Co., Pittsburgh, Pa.

256,995. JUNE ROSE BRAND—chamois and sponges. S. Vollman Co., Chicago, Ill.

257,065. WEARFLEX — rubber-composition soles and heels, arctics and tennis shoes made of rubber and fabric, and rubber boots and overshoes. Endicott Johnson Corp., Endicott, N. Y.

257,069. Representation of a zeppelin containing the word: "ZEPLIN" and below the representation the words: "LONG WEAR"—outsoles and heels of rubber and leather. I. Feldstein, doing business as Morris Feldstein & Son, New York, N. Y.

257,072. SUNRISE—bathing caps. I. B. Kleinert Rubber Co., New York, N. Y.

257,125. "NU-PRUF" — shower-bath curtains and sanitary slip-on toilet-seat covers. Bucklein Rubber Co., New York, N. Y.

257,181. Triangle containing the words: "RUBBER SERVICE LABORATORIES" and a smaller triangle containing the words: "RUSCO MOLD PASTE"—chemical composition applied to molds to prevent sticking of molded articles to the mold. The Rubber Service Laboratories Co., Akron, O.

257,182. Triangle containing the words: "RUBBER SERVICE LABORATORIES" and a smaller triangle containing the word: "UREKA"—compound used as a vulcanization accelerator in the curing of rubber articles.

June 4, 1929

Act of February 20, 1905

257,201. Circle with a dark background and a light border containing the representation of two eagles perched on top of a mountain—pneumatic tires and parts wholly or partly of rubber, rubber nonskid devices, tire protectors, tire and tube repair outfits, patches, and bandages. The Goodyear Tire & Rubber Co., Akron, O.

257,244. RANGE FINDER—golf clubs, balls, bags, irons, and tees. Donaldson Mfg. Co., Ltd., Glasgow, Scotland.

257,282. DREADNAUGHT—tires and inner tubes. F. G. Schenuit, Baltimore, Md.

Dominion of Canada

May 7, 1929

46,023. Words: "COURT SPECIAL" and the representation of a shoe with a toe strip in any color different from and distinctive to that of the shoe itself—sport shoes and boots. The Northern Rubber Co., Ltd., Guelph, Ont.

46,071. Word: "RAPIER"—golf balls and other appliances for playing the game of golf. Donaldson Mfg. Co., Ltd., 1A Blythswood Square, Glasgow, Scotland.

May 14, 1929

46,129. Word: "VULCTITE" in red letters superposed on a representation of a self-vulcanizing patch — self-vulcanizing patches and tire-repairing and similar products. National Rubber Co., Ltd., Toronto, Ont.

46,134. Word: "MACINLOP"—goods manufactured wholly or partly from india rubber, gutta percha, and substitutes therefor. Macinlop, Ltd., 32 Osnaburg St., London, England.

May 21, 1929

46,235. Words: "RUBBER FLOW"—friction braking mechanism and parts, recoil checks, shock absorbing mechanisms, and the like for vehicles. John Warren Watson Co., Philadelphia, Pa., U. S. A.

May 28, 1929

46,277. Words: "LADY DAINTY"—rubber goods. United Drug Co., Ltd., Toronto, Ont.

46,282. Word: "ROADCRAFT" — pneumatic tires. Gutta Percha & Rubber, Ltd., Toronto, Ont.

46,292. Arbitrary term: "HANSAPLAST"—wound dressing composed of adhesive caoutchouc plaster and impregnated mull compress. P. Beiersdorf & Co., Aktiengesellschaft, Hamburg, Germany.

United Kingdom

May 15, 1929

501,315. MILO—goods manufactured from india rubber and gutta percha not included in other classes. Boston Woven Hose & Rubber Co., Cambridge, Mass., U. S. A.

May 22, 1929

491,040. Representation of an elephant trampling on a serpent—india rubber solution and patches. The Elephant Chemical Co., Ltd., 171-173 Neate St., London, S.E.5.

491,042. Representation of an elephant trampling on a serpent—repair outfits for tires, and tape impregnated with india rubber for insulating purposes. The Elephant Chemical Co., Ltd., 171-173 Neate St., London, S.E.5.

Designs

United States

78,459. TIRE. Term 14 years. F. Fellowes, Sutton Coldfield, England, assignor to Dunlop Tire & Rubber Corp., Buffalo, N. Y.

78,502. SHOE SOLE. Term 14 years. G. W. Blair, assignor to Mishawaka Rubber & Woolen Mfg. Co., both of Mishawaka, Ind.

78,537. TIRE. Term 14 years. H. B. Savage, assignor to The Norwalk Tire & Rubber Co., both of Norwalk, Conn.

78,579. TIRE. Term 14 years. P. Litchfield, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

78,646. SHOE SOLE. Term 14 years. L. M. Oakley, assignor to Essex Rubber Co., both of Trenton, N. J.

78,694. TIRE. Term 14 years. J. Martin, New York, N. Y.

78,700. TIRE. Term 14 years. W. C. Tyler, assignor to Ajax Rubber Co., Inc., both of Racine, Wis.

Dominion of Canada

8,258. GOLF BALL. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106 Cannon St., London, E.C., England.

8,261. LIFE-BELT. I. & L. Dorogi, Budapest, Albertfalva, Hungary.

8,272. TIRE. The Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

8,296. TIRE. The Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

8,297. TIRE. Dominion Rubber Co., Ltd., Montreal, P. Q.

8,320. SYRINGE. Faichney Instrument Corp., Watertown, N. Y., U. S. A.

8,321. HYPODERMIC SYRINGE. Faichney Instrument Corp., Watertown, N. Y., U. S. A.

8,328 and 8,329. TIRE. Dominion Rubber Co., Ltd., Montreal, P. Q.

MARKET REVIEWS

Crude Rubber

New York Exchange

JUNE 1. With steady London cables and short covering, but in a quiet market, prices advanced about 30 to 40 points and closed steady. June, 21.00; July, 21.40; Sept., 21.90; Oct., 22.00; Nov., 22.00; Dec., 22.30; Jan., 22.50; Mar., 22.80.

JUNE 3. London opened ⅛ to ¼ higher and Exchange opening prices were up 30 to 40 points. Trading was very quiet and prices sagged about 10 points during midday trading. The market closed up 30 points for the day, yet 10 points lower than the high. June, 21.10; July, 21.70; Aug., 21.90; Sept., 22.10; Oct., 22.20; Nov., 22.50; Dec., 22.60; Jan., 22.70; Feb., 22.90; Mar., 22.90.

JUNE 4. With London off ⅛ pence and fluctuating in a ⅛ range, prices sagged a trifle, but trading was dull and no definite trend could be seen. Final prices were off from 20 to 30 points for the day. June, 21.00; July, 21.40; Aug., 21.70; Sept., 21.90; Oct., 22.00; Nov., 22.00; Dec., 22.40; Jan., 22.50; Feb., 22.60; Mar., 22.80.

JUNE 5. Trading was a little more active and with a better tone, yet when prices advanced to any extent, there were sellers to hold it steady. There was no excited trading, but just enough commission-house buying and outside interest to make short sellers a little nervous. Prices closed 10 points higher. June, 20.60; July, 21.00; Aug., 21.30; Sept., 21.50; Oct., 21.70; Nov., 21.80; Dec., 22.00; Jan., 22.10; Feb., 22.30; Mar., 22.50.

JUNE 6. The market showed a little better tone and with slightly higher range in London and Singapore, prices gained a little and closed about 10 to 20 points above last night's closing. June, 20.80; July, 21.20; Aug., 21.40; Sept., 21.70; Oct., 21.80; Nov., 22.00; Dec., 22.00; Jan., 22.30; Feb., 22.50; Mar., 22.60.

JUNE 7. London was ¼ pence better and then ⅛ easier; therefore, prices backed and filled with little trading. Just a waiting market with no disposition to trade and a slight fluctuation of 10 points either way. June, 20.80; July, 21.10; Aug., 21.40; Sept., 21.60; Oct., 21.70; Nov., 22.00; Dec., 22.10; Jan., 22.30; Feb., 22.30; Mar., 22.40.

JUNE 8. One of the dullest days on the exchange, only eight contracts having changed hands.

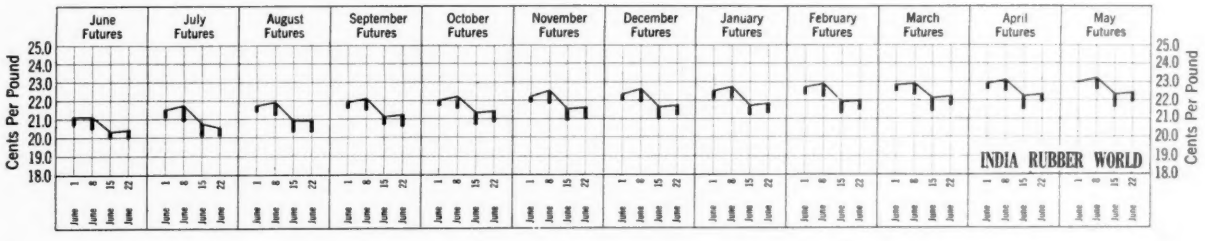
JUNE 10. With slightly easier London cables the market opened off about 10 points and remained dull. Then on urgent selling of 150 lots of July by a commission house, prices quickly slid off about 60 points. As the market came to a close, fair buying developed and prices came back about 20 to 30 points from the low and with further buyers at these figures. It was thought that factories who had bought shipment rubber were hedging their purchases on the Exchange and that some of the selling came from Akron. June, 20.10; July, 21.00; Aug., 21.30; Sept., 21.00; Oct., 21.20; Nov., 21.40; Dec., 21.60; Jan., 21.90; Feb., 21.90; Mar., 22.10.

JUNE 11. Selling by a prominent Wall Street trader in rather large quantities started prices downwards and prices declined 40 to 60 points before any support was encountered. At the close, covering by others who sold brought prices back about 10 points from the low. Trading was very dull at the close. June, 20.10; July, 20.40; Aug., 20.70; Sept., 21.00; Oct., 21.20; Nov., 21.40; Dec., 21.60; Jan., 21.70; Feb., 21.90; Mar., 22.10.

JUNE 12. With London prices up ⅛ to ¼ pence opening prices were higher by 10 points and with fair buying and some short covering together with trade buying, prices rose 30 points at the high prices, but finally closed at a net gain of 20 points for all positions. Trading was quiet, but as May consumption figures are expected, traders preferred to even up their commitments rather than take a position. This, with little rubber offered from the East, caused a steadier market. June, 20.20; July, 20.60; Aug., 20.00; Sept., 21.10; Oct., 21.30; Nov., 21.50; Dec., 21.60; Jan., 21.70; Feb., 21.90; Mar., 22.00.

JUNE 13. London cables were steady and East cables up ⅛ pence. Prices opened at the previous close to 10 points higher, but with no trade buying and dealers waiting for the consumption figures, prices fluctuated in a range of 10 points with no trend either way, and closed even to 10 points higher. June, 20.30; July,

New York Rubber Exchange—High and Low Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND—"A" CONTRACTS

Positions 1929	May, 1929 27	28	29	30*	31	June, 1929 1	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22	24	25
June	20.9	20.7	21.0	....	21.0	21.1	21.1	21.0	20.5	20.6	20.8	20.6	20.1	20.1	20.2	20.3	20.0	20.0	20.0	20.4	20.3	20.0	20.1	20.2	20.2	....
July	21.4	21.1	21.5	....	21.3	21.4	21.7	21.4	20.9	21.0	21.2	21.0	20.4	20.4	20.6	20.7	20.1	20.1	20.1	20.5	20.4	20.1	20.2	20.3	20.2	20.1
August	21.6	21.4	21.7	....	21.6	21.6	21.9	21.7	21.2	21.3	21.4	21.3	20.7	20.7	20.8	20.9	20.4	20.3	20.4	20.9	20.7	20.3	20.5	20.6	20.5	20.3
September	21.9	21.6	21.8	....	21.8	21.9	22.1	21.9	21.5	21.5	21.7	21.5	21.0	20.9	21.1	21.1	20.7	20.7	20.7	21.2	20.9	20.6	20.8	20.9	20.8	20.7
October	22.0	21.7	22.0	....	21.9	22.0	22.2	22.0	21.6	21.7	21.8	21.6	21.2	21.1	21.3	21.2	20.8	20.7	20.9	21.4	21.1	20.8	21.0	21.1	21.0	20.9
November	22.2	21.9	22.2	....	21.9	22.1	22.5	22.2	21.8	21.8	22.0	21.9	21.4	21.3	21.5	21.4	21.0	20.9	21.1	21.6	21.3	21.0	21.2	21.3	21.2	21.1
December	22.3	22.0	22.3	....	22.1	22.3	22.6	22.4	21.9	22.0	22.1	22.0	21.6	21.5	21.6	21.6	21.1	21.0	21.2	21.7	21.4	21.2	21.4	21.5	21.4	21.3
1930																										
January	22.4	22.1	22.4	....	22.2	22.5	22.7	22.5	22.1	22.1	22.3	22.2	21.7	21.6	21.7	21.7	21.2	21.2	21.3	21.8	21.6	21.4	21.7	21.7	21.7	21.6
February	22.6	22.3	22.5	....	22.3	22.7	22.9	22.6	22.2	22.3	22.5	22.3	21.9	21.8	21.9	21.9	21.3	21.3	21.5	22.0	21.8	21.6	21.8	21.9	21.9	21.8
March	22.8	22.5	22.7	....	22.5	22.8	22.9	22.8	22.3	22.5	22.6	22.5	22.1	21.9	22.0	22.0	21.4	21.4	21.7	22.2	22.0	21.8	22.0	22.0	22.0	21.9
April	22.9	22.6	22.8	....	22.6	22.9	23.1	22.9	22.5	22.6	22.7	22.7	22.2	22.0	22.1	22.1	21.5	21.5	21.9	22.3	22.1	22.0	22.1	22.1	22.1	22.0
May	....	....	....	....	....	23.0	23.2	23.0	22.6	22.7	22.9	22.8	22.3	22.1	22.2	22.2	21.6	21.6	22.0	22.4	22.2	22.1	22.1	22.2	22.3	22.2

* Holiday.

20.70; Aug., 20.90; Sept., 21.10; Oct., 21.20; Nov., 21.40; Dec., 21.60; Jan., 21.70; Feb., 21.90; Mar., 22.00.

JUNE 14. London quotations being steady, prices opened 10 to 20 points higher than the previous close. Reported consumption for May of 49,233 tons is a new high record. Trade factors and commission houses sold on this good news, and with little consumers' support prices quickly sold off 50 to 60 points on every position and closed 10 points above the low with little support. June, 19.90; July, 20.10; Aug., 20.00; Sept., 20.70; Oct., 20.80; Nov., 20.90; Dec., 21.10; Jan., 21.20; Feb., 21.40; Mar., 21.60.

JUNE 15. A fairly active market with a little short covering, caused prices to close steady to 10 points higher. No special trend was in evidence. June, 20.00; July, 20.10; Aug., 20.30; Sept., 20.70; Oct., 20.80; Nov., 20.90; Dec., 21.00; Jan., 21.20; Feb., 21.30; Mar., 21.40.

JUNE 18. London opened ⅛ higher in all positions and maintained this advance all day in a steady market. Opening prices were 10 points higher on all positions. With short covering and good trade buying prices rose easily 50 points on all active positions and maintained this advance at the close. June, 20.40; July, 20.60; Aug., 20.90; Sept., 21.20; Oct., 21.40; Nov., 21.60; Dec., 21.70; Jan. 21.70; Feb., 22.00; Mar., 22.20.

JUNE 19. London continued steady to ⅛ pence higher, and opening prices were 20 to 30 points above last night's close, with little activity. Failure of any outside buying and factories to follow the advance caused some pressure to those bearishly inclined, and prices advanced 20 to 30 points, but with no real pressure against the market. June, 20.20; July, 20.40; Aug., 20.70; Sept., 20.90; Oct., 21.10; Nov., 21.30; Dec., 21.40; Jan., 21.60; Feb., 21.80; Mar., 22.00; Apr., 22.10; May, 22.20.

JUNE 20. Softer London cables, commission-house selling, and switching from July to Dec by dealer interests at a differential o 110 points were trading features. Support was poor, and the final results were losses from 30 to 40 points from the previous close. June, 20.00; July, 20.10; Aug., 20.30; Sept., 20.60; Oct., 20.80; Nov., 21.00; Dec., 21.20; Jan., 21.40; Feb., 21.60; Mar., 21.80.

JUNE 21. With a better feeling and steady London cables the trading was cautious and another decrease of 500 tons reported in London stocks helped values. These factors together with good factory buying reported made a steady market, and prices came back 10 to 20 points and closed very steady. June, 20.10; July, 20.20; Aug., 20.50; Sept., 20.80; Oct., 21.00; Nov., 21.20; Dec., 21.40; Jan., 21.70; Feb., 21.80; Mar., 22.00.

JUNE 22. With a few short-covering transactions and steady London cables, prices were steady and closed about 10 points higher than the previous close.

JUNE 24. With London practically unchanged from Saturday's close but barely steady, prices fluctuated in a very narrow range with no trend in either direction and extremely dull to 10 points higher. June, 20.20; July, 20.30; Aug., 20.60; Sept., 20.90; Oct., 21.10; Nov., 21.30; Dec., 21.50; Jan., 21.70; Feb., 21.90; Mar., 22.10.

JUNE 25.—With steady London prices, trading was quiet, but with firm undertone. At one time the market was 20 points lower than yesterday but closed 10 points lower, with buyers at these prices. June, 20.00; July, 20.10; Aug., 20.40; Sept., 20.70; Oct., 21.00; Nov., 21.10; Dec., 21.30; Jan., 21.60; Feb., 21.80; Mar., 22.00.

June might be described as a very dull month on the Exchange, with a few high spots of active trading and small changes in prices.

New York Outside Market

JUNE 1. London cables were steady and Exchange prices higher. Dealers were reluctant sellers, preferring to await developments. Factories stood aside and little business was reported.

Spot	Today	Month Ago	Year Ago
Crepe	21⅞	20⅝	19⅞
Ribs	21⅛	19⅞	19¾
Upriver Fine	23	22	20¼

JUNE 3. As offers from Singapore and London were steady and firmer, dealers raised prices, but factories were not interested except at price concessions.

Spot	Today	Month Ago	Year Ago
Crepe	22	20⅝	19⅞
Ribs	21⅛	19⅞	19¾
Upriver Fine	23	22	20¼

JUNE 4. London was slightly easier, but with Singapore steady, a few shipment offers were taken up. Little factory business was reported. Trading in actuals was a dull affair.

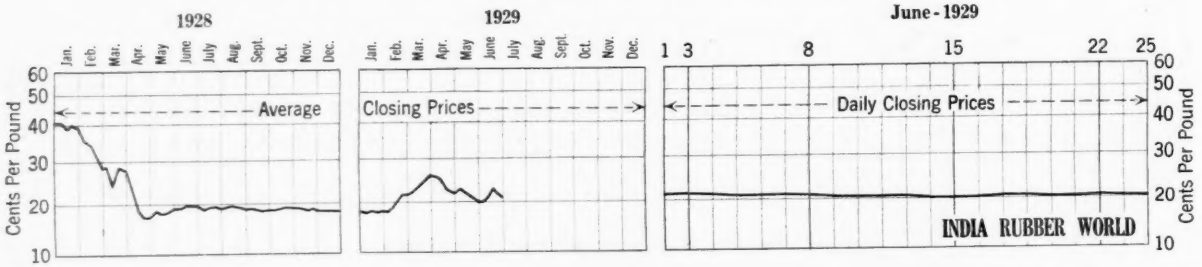
Spot	Today	Month Ago	Year Ago
Crepe	22	20⅝	19¾
Ribs	21¼	19⅞	19¾
Upriver Fine	23	22	20½

JUNE 5. Very little trading in actuals was reported and offerings were not pressing, but manufacturers were noticeable by their absence. First latex was in some demand and was held at 1 cent over ribs. Estimates on production seem to be holding up trading.

Spot	Today	Month Ago	Year Ago
Crepe	22	21⅞	19⅞
Ribs	21	19⅞	19¾
Upriver Fine	22½	22	20¼

JUNE 6. Manufacturers were buying very little actual rubber because supplies were ample and there was no need to enter the market, although they are reported not fully covered for July-Sept. positions. Prices were ⅛ higher on asking price with very little taken.

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	May, 1929					June, 1929																	
PLANTATIONS	27	28	29	30*	31	1	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22
Sheet																								
Ribbed smoked	21⅛	20⅞	21¼	....	21⅛	21¼	21½	21¼	20⅞	20⅞	21	21	20⅜	20⅜	20⅜	20½	20	20	20⅛	20⅝	20⅜	20⅛	20⅜	20½
Crepe																								
First latex	21⅝	21⅜	21⅝	....	21⅝	21¾	22¼	21⅞	21⅝	21½	21¾	21¾	21⅜	21¼	21½	21½	21⅛	21¼	21⅛	21⅝	21⅜	21¼	21⅜	21½
"B" blanket	19⅛	18⅞	19¼	....	19⅜	19⅜	19½	19½	19¼	19¼	19¼	19¼	18⅝	18⅝	18¾	18¾	18½	18⅜	18⅜	18⅜	18⅝	18⅜	18⅝	18⅝
"C" blanket	18⅜	18½	18⅞	....	19	19	19¼	19¼	19	19	19	19	18⅛	18⅜	18⅜	18¾	18	18	18⅛	18¾	18¼	18⅛	18¼	18⅜
"D" blanket	18⅝	18⅛	18⅜	....	18½	18¼	18⅞	18⅞	18½	18½	18½	18½	17⅞	17⅞	17⅞	17⅜	17½	17½	17⅝	17⅞	17¾	17⅝	17¾	17⅞
No. 2 brown	18⅞	18⅝	18⅞	....	19¼	19⅛	19¼	19¼	18⅞	18⅞	19	18⅞	18¼	18¼	18⅜	18⅜	18	18	18⅛	18⅜	18¼	18⅛	18¼	18⅜
Rolled brown	14⅜	14⅛	14⅜	....	14½	14½	14½	14⅜	14⅛	14⅛	14¼	14¼	13⅝	13⅝	13¾	13¾	13⅜	13⅜	13⅜	13⅝	13⅝	13½	13⅜	13⅝
Off latex	21¼	21	21⅜	....	21¼	21½	21¾	21½	21⅛	21⅛	21⅜	21⅜	21	20⅞	21⅛	21⅛	20⅞	20⅞	20¾	21¼	21⅛	20⅞	21	21

*Holiday.

Spot	Today	Month Ago	Year Ago
Crepe	22	21	19⅞
Ribs	21⅛	20¼	19¾
Upriver Fine	22½	22	20

JUNE 7. Manufacturers were not buying and seem to be waiting out the market as it is working their way and they have enough rubber for immediate requirements. Crepe remains at a premium and is fairly scarce. Consumption for May is eagerly awaited and there is little buying.

Spot	Today	Month Ago	Year Ago
Crepe	22	21⅝	19¾
Ribs	21⅛	20⅞	19⅝
Upriver Fine	22½	22¾	22

JUNE 8. One of the dullest days in the trade and no transactions reported. Prices unchanged.

JUNE 10. A fair business was done in nearby rubber, as exchange prices were off about 60 points and factories were able to pick up requirements without disturbing the markets and getting rubber ½ to 5/8-cent cheaper than last week. No activity but just quiet absortion.

Spot	Today	Month Ago	Year Ago
Crepe	21½	22⅛	18¾
Ribs	20⅝	21½	18⅝
Upriver Fine	22¼	23½	22

JUNE 11. Buying by manufacturers continues on a hand-to-mouth policy and seems confined to spot with little inclination to buy the futures. Prices were shaded from ⅛ to ¼-cent, but no distress selling was in evidence.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	21¾	19¾
Ribs	20½	21	19½
Upriver Fine	22¼	23¼	22

JUNE 12. Exchange prices were steadier and London higher by ⅛ to ¼ pence, and very little rubber was offered from the East. Dealers were reserved and some refused to quote prices, as May consumption figures were expected and they preferred to wait. Factories maintained a waiting attitude inquiring only for nearby prices.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	22⅛	18¾
Ribs	20½	21½	18⅝
Upriver Fine	22¼	23½	22

JUNE 13. With slightly higher London cables and Eastern offers ⅛ pence higher, dealers were again reserved and little business was done. It was thought that manufacturers have considerable July-Sept. rubber to buy, but are hoping to obtain it at lower prices. Invoice figures are considered favorable as they were lower than anticipated.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	21¾	19¾
Ribs	20⅝	21	19½
Upriver Fine	22¼	23¼	22

JUNE 14. The May consumption figures of 49,233 tons established a new high figure for all time. The market was not bullish for these figures had been discounted, and there appears to be plenty of rubber for immediate consumption. Prices declined ½-cent for all positions.

Spot	Today	Month Ago	Year Ago
Crepe	20⅞	22¾	20
Ribs	20⅛	21⅞	19¾
Upriver Fine	21½	24	23½

JUNE 15. With steady exchange prices and no factory interest, prices for the actuals remained steady, and no sales were reported.

JUNE 18. A firmer foreign market and advances of about 50 points on the Exchange caused dealers to raise prices for actuals about ⅜ to ½-cent on all grades and positions. There was a moderate demand for rubber although large interests were not active buyers. It is reported that Russia and other foreign countries are buyers in London, and this also stimulated the market. Short selling seems to have stopped for the moment, and further advances may occur.

Spot	Today	Month Ago	Year Ago
Crepe	21⅜	24½	19
Ribs	20⅝	23½	18¾
Upriver Fine	22¾	25¼	19

JUNE 19. London and Singapore advanced in sympathy with the New York rise yesterday, but this advance was not maintained, and prices slid off a little, with some factory buying for spot and nearby ribs. Off grades were in fair demand with firmer prices. Final prices were off ⅛ on standards.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	23½	19¾
Ribs	20½	22⅞	19½
Upriver Fine	22¾	24¾	22

JUNE 20. Due to the liquidation of some commission houses and slightly easier London cables, prices were about ¼-cent lower on all positions, and this together with a lack of factory buying made the market look rather weak although not decidedly so.

Spot	Today	Month Ago	Year Ago
Crepe	21	24¼	19⅞
Ribs	20¼	23½	19⅝
Upriver Fine	22½	25¼	22

JUNE 21. In the late trading after the

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and June 25, the current date

Plantation Hevea	June 25, 1928	May 25, 1929	June 25, 1929
Rubber latex (Hevea)...gal.	$1.50 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.19⅞@.20	.22 @.22¼	.21½@.21¾
July	.19⅞@	.22⅛@.22¼	.21¾@
August-September	.19⅞@	.22¼@.22⅝	.21⅞@
October-December	.19¾@.19⅞	.22⅞@.23	.22 @
January-March	.19¾@	.23¼@.23½	.22¼@
Off latex, spot	.19½@	.21¾@	.21½@
"P" Blanket, spot	.19¼@	.19½@	.18½@
July	.19¼@	.19¾@	.18½@
August-September	.19½@	.20¾@	.18½@
October-December	.19¼@	.20½@	.18¾@
January-March	.19⅛@	.20¾@.21	.19 @
"C" Blanket, spot	.18¾@	.19¾@	.18½@
Brown No. 1	.19 @	.19½@	.18⅞@
Brown No. 2	.18⅞@	.19¼@	.18⅝@
Brown, roll	.18½@	.15¼@	.14 @
Sheet			
Ribbed, smoked spot	.19¾@	.21¾@	.20¼@.20¾
July	.19⅝@.19¾	.21½@	.20¼@.20⅜
August-September	.19⅝@	.21⅞@.22	.20⅜@.20½
October-December	.19⅝@	.22¼@.22½	.21½@.21⅜
January-March	.19⅝@	.22½@.23	.21¾@
East Indian			
PONTIANAK			
Banjermasin	.09½@	@	@
Pressed block	.14½@	.15 @.16	.16½@
Sarawak	.09½@	@	@
South American			
PARAS			
Upriver, fine	.22 @	.23 @	.21¾@
Upriver, fine	*.26½@	*.28 @	*.26½@
Upriver, coarse	.15 @	.13¾@	.12½@
Upriver, coarse	*.22½@	*.20 @	*.19 @
Islands, fine	@	.20½@	.20 @
Islands, fine	*.26 @	*.27½@	*.26¼@
Acre, Bolivian, fine	.23 @	.23½@	.22¾@
Acre, Bolivian, fine	*.27 @	*.29 @	*.27 @
Beni, Bolivian	.23½@	.23¾@	.23 @
Madeira, fine	.22 @	.23 @	.21¾@

South American	June 25, 1928	May 25, 1929	June 25, 1929
PARAS—*Continued*			
Peruvian, fine	.21½@	.21½@	.20 @
Tapajos, fine	.20½@	.21¼@	.20 @
CAUCHO			
Upper caucho ball	.14 @	.13¾@	.12½@
Upper caucho ball	*.22½@	*.20 @	*.19 @
Lower caucho ball	.13½@	.13 @	.11¾@
Maniçobas			
Ceará negro heads	†.17 @	†.20 @	†.20 @
Ceará scrap	†.09 @	†.12 @	†.12 @
Manicoba, 30% guaranteed	†.19 @	†.22 @	†.22 @
Mangabiera, thin sheet	†.19 @	†.22 @	†.22 @
Centrals			
Central scrap	.15½@	.12 @.13	.11 @.12
Central wet sheet	.08 @	@	.08 @.10
Corintò scrap	.15½@	@	.10 @.11
Esmeralda sausage	.15½@	.12 @.13	.11 @.12
Guayule			
Duro, washed and dried	.20 @	.20 @	.19½@
Ampar	.21 @	.21½@	.21 @
Gutta Percha			
Gutta Siak	.18 @	.20 @	.20½@.21¾
Gutta Soh	.27 @	@	@
Red Macassar	2.60 @2.90	2.90 @	3.00 @
Balata			
Block, Ciudad Bolivar	.39 @	.52 @.54	.52 @.53
Colombia	.39 @	.49 @	.46 @.48
Manaos block	.42 @	.57 @.58	.58½@.59½
Panama	.44 @	@	@
Surinam sheet	.50 @	.54 @.56	.54 @.56
Amber	.54 @	.58 @.60	.57 @.59
Chicle			
Honduras	‡.68 @	‡.66 @	‡.68 @
Yucatan, fine	‡.68 @	‡.66 @	‡.68 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Exchange closed, a rather active demand for actual rubber appeared. Factories took good quantities for nearby and also picked up some futures. This buying stiffened prices and yesterday's gain was lost. Crepe was in special demand, appeared scare, and was held at relatively high figures.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	23	19
Ribs	20⅜	22⅜	18¾
Upriver Fine	22½	24¼	19

JUNE 24. With a steady London market and little change of prices on the Exchange, prices for actuals remained steady. But factories declined to follow the latest slight advances in prices, resulting in few transactions. June prices have been in favor with buyers, at fair prices for all, but many opinions are now leaning toward higher prices as the belief is that with reduced stocks and good consumption figures prices could easily advance 2 to 3 cents.

Spot	Today	Month Ago	Year Ago
Crepe	21¼	23	19
Ribs	20¼	22⅜	18¾
Upriver Fine	22½	24¼	19

JUNE 25. With steady Exchange prices it was reported that there was a very good factory inquiry for actual rubber, factories taking on spot July, Aug., and also some Sept., Nov. rubber. Dealers could have sold large quantities at lower figures but would only accept orders at their own prices. The market closed for the month very steady with buyers.

Spot	Today	Month Ago	Year Ago
Crepe	21⅝	22	19⅞
Ribs	20⅜	21¼	19¾
Upriver Fine	22½	23	22¾

Rubber Afloat to the United States

All figures in long tons

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
June 1	6,024	759	2,044	45	8,872
June 8	6,117	1,102	1,808	68	9,095
June 15	6,812	983	1,521	99	9,415
June 22	6,393	502	1,555	132	8,582

Singapore

An official cablegram dated June 14 from Singapore to the Malayan Information Agency of London, Eng., gives the following statistics regarding stocks of rubber on May 31,1929. Dealers' stocks in Singapore, 26,274 tons; Penang, 4,490 tons; Malacca, 1,782 tons; Wellesley Province, 105 tons; Dindings, 59 tons; a total of 32,710 tons. Board stocks in Singapore, 490 tons; Penang, 678; a total of 1,168 tons. Grand total of dealers' and board stocks of 33,878 tons.

Rubber Consumption Estimates for 1929

Crude rubber consumption by the United States alone during 1929 will attain a minimum figure of 500,000 tons and very possibly reach the record total of 520,000 tons, according to dispatches from London quoting the foremost authorities in the industry to members of the Rubber Exchange of New York.

Consumption outside of the United States last year, according to government figures, totaled 242,032 tons, which this year will be increased to between 275,000 and 280,000 tons; and if these estimates prove correct, world consumption of rubber this year will attain the unheard of total of approximately 800,000 tons.

The London authorities claim that present prices (between 20½ and 21½ cents per pound, spot New York) favor a world production of 765,000 tons, but that an 800,000 world production will only be attained in the event that the New York basis rises to between 25 and 26 cents.

The production costs of crude rubber in the Far East now range between a minimum of 5½ pence and a maximum of 9½ pence, according to the producing plantation, equivalent roughly to between 12 and 20 cents per pound.

Exchange Notes

The Rubber Exchange of New York has reduced the rates of commission charged both members and non-members residing outside of the United States and Canada. The reduction becomes effective on July 1. Members and non-members resident abroad are now paying $5 more commission per contract of 5,000 pounds for the round-turn than domestic members and non-members are. This extra charge

Imports, Consumption, and Stocks

The accompanying graph covers crude rubber importations, consumption, and stocks by months for the years 1927 to 1928, inclusive, and for January to June, inclusive, 1929. The figures for June are estimated.

The corrected imports for May totaled 49,180 tons or 4,180 tons over the estimated amount.

The corrected consumption for May was 48,746 tons or 3,746 more than estimated.

June estimated imports are placed at 42,000 tons. The other estimates for June are: consumption 43,000 tons, on hand 96,000 tons, and afloat 50,000 tons.

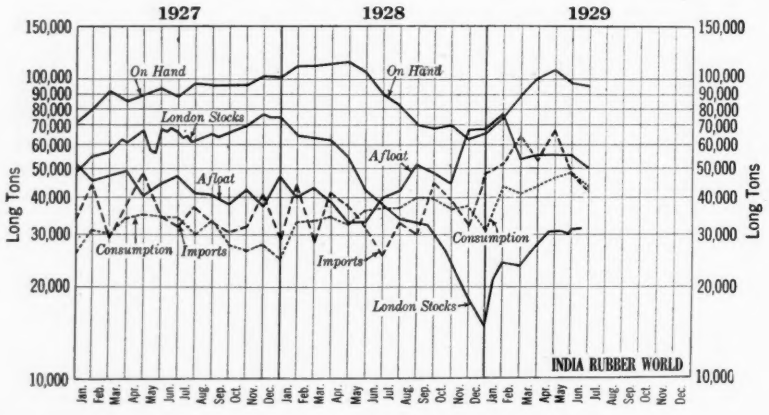
London stocks have kept a few hundred tons above the 30,000 level practically since April. The record from May 25 to June 22 is as follows: May 25, 30,893 tons; June 1, 31,539 tons; June 8, 31,635 tons; June 15, 31,142 tons; June 22, 30,617 tons.

Liverpool stocks on the same dates were: May 25, 4,665 tons; June 1, 4,642 tons; June 8, 4,750 tons; June 15, 4,733 tons; June 22, 4,515 tons.

Twelve Months	Imports Tons	Consumption Tons	Stocks On Hand Tons	Stocks Afloat Tons	London Tons	Singapore and Penang Tons
1925	384,837	389,136	51,000*	48,000*	.....	.....
1926	411,900	366,140	72,510*	52,019*	.....	.....
1927	426,258	370,915	100,130*	47,939*	63,207*	25,868*
1928	448,378	441,336	66,166*	68,764*	24,423†	34,432*
1929						
January	52,305	43,000	76,342	78,596	24,423	33,119
February	64,528	41,594	90,058	53,825	25,000	.....
March	53,824	44,730	100,537	56,476	28,077	33,784
April	74,171	47,051	107,659	55,409	31,213	.....
May	49,180	48,746	97,192	55,404	31,893	.....
June (est.)	42,000	43,000	96,000	50,000	.....	.....

*December 31. †January 26.

The 1928 figures, unless otherwise specified, are all as of the first of each month.



Ceylon Rubber Exports

January 1 to March 31, 1929

	Tons
To United Kingdom	4,075.35
Continent	2,236.89
Australia	912.84
America	15,147.45
Egypt	3.00
Africa	2.60
India	19.68
Japan	95.53
Total	22,493.34
For the same period last year	12,160.77

Annual Exports, 1921-1928

	Tons
For the year 1928	57,825.48
1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

will be reduced to $2.50 beginning this month. Under the new rate foreign members will pay $10 and foreign non-members $17.50.

Elliot H. Simpson has been suspended from the Rubber Exchange of New York for sixty days, having violated Section F of Rule 43, which follows:

"Misleading or ambiguous bids, offers or acceptances, as well as those of a frivolous nature, are strictly prohibited, and a member so offending shall in the first instance be subject to a fine in the discretion of the floor committee, and upon complaint of the floor committee or of a member to the supervisory committee may be dealt with in acordance with Section 43 of the by-laws."

Reclaimed Rubber

PRODUCTION and demand for practically all types of reclaims continue at an active pace. Tire and tube manufacturing schedules are high and may not be reduced for some time after July 1. The fine riding weather of the past few weeks has stimulated interest in touring and bus travel and resulted in an enormous sale of replacement tires.

Reclaim is also finding a free outlet in the activity of many other lines of rubber goods such as auto-topping, insulated wire, sport shoes, heels, soles, and mechanicals. The consumption ratio of reclaim to crude is being maintained at the high level of last year, despite the increase in crude consumption thus far this year.

At present levels reclaims show satisfactory all around economy in compound cost, production cost, reduction in batch mixing time, and increase in speed of delivery of tubing machine output, etc.

Essentially all grades are slightly lower than one month ago, and the price spreads are consequently narrower. The standard grades are listed and quoted as follows:

New York Quotations

June 25, 1929

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black	1.20	$0.12¼@$0.12¾
red	1.20	.12¼@ .12¾
Auto Tire		
Black	1.21	$0.07¼@$0.08
Black selected tires	1.18	.08¼@ .08½
Dark gray	1.35	.10 @ .10¼
Light gray	1.38	.12 @ .12¼
White	1.40	.12½@ .13
Shoe		
Unwashed	1.60	.07 @ .07¼
Washed	1.50	.09¾@ .10
Tube		
No. 1	1.00	.13 @ .13½
No. 2	1.10	.10½@ .10¾
Miscellaneous		
Red	1.35	.12¼@ .12¾
Truck tire, heavy gravity	1.55	.07 @ .07¼
Truck tire, light gravity	1.40	.07¼@ .07½
Mechanical blends	1.60	.07 @ .07½

Rubber Scrap

THE rubber scrap market on all grades was duller and weaker in June than in May. Reclaimers are busy and well supplied with scrap, indicating good demand for scrap later.

BOOTS AND SHOES. These are quiet but steady in price. The only grade that declined was black shoes which fell back ⅛-cent.

MECHANICALS. In this line all grades are dull and uninteresting to reclaimers. Air brake hose dropped $1 to $1.50 a ton. Soft air brake declined ⅛-cent while all other mechanicals remained unchanged.

PNEUMATIC TIRES. These grades are weaker. Collections are improving. Prices of all grades except white have declined. Compared with quotations of one month ago, mixed tires with beads are $1.50 to $2 lower; beadless tires $1 lower; mixed auto peelings $3.50 to $5.00 lower; and mixed motor-truck clean tires $3.50 to $4 lower.

INNER TUBES. All grades are weaker in sympathy with the decline in crude rubber. No. 1 grade remains unchanged. No. 2 Red, and mixed tubes have declined ¼-cent each.

Thus, of the 21 grades of scrap listed 9 only have declined in quotation the past month. The remaining 12 grades are steady if somewhat weaker.

CONSUMERS' BUYING PRICES

Carload Lots

June 25, 1929

Boots and Shoes	Prices
Boots and shoes, black....*lb.*	$0.01¼@
Untrimmed arctics.....*lb.*	.00¾@ .01
Tennis shoes and soles...*lb.*	.00¾@
Hard Rubber	Prices
No. 1 hard rubber.....*lb.*	$0.08 @$0.08½
Mechanicals	
Mixed black scrap.....*lb.*	.00½@ .00⅝
Hose, air brake.....*ton*	27.50 @28.00
regular soft .....*lb.*	.00⅝@
No. 1 red.....*lb.*	.02 @ .02¼
No. 2 red .....*lb.*	.01 @ .01¼
White druggists' sundries.*lb.*	.02 @ .02½
Mechanical .....*lb.*	.01½@ .01⅝
Tires	
Pneumatic Standard—	
Mixed auto tires with beads .....*ton*	23.50 @24.00
Beadless .....*ton*	32.00 @33.00
White auto tires with beads .....*ton*	40.00 @42.00
Beadless .....*ton*	48.00 @49.00
Mixed auto peeling.....*ton*	33.00 @33.50
Solid—	
Mixed motor truck, clean .....*ton*	20.00 @21.00
Inner Tubes	
No. 1, floating.....*lb.*	.06½@ .06¾
No. 2, compounded.....*lb.*	.04¼@ .04⅜
Red .....*lb.*	.04¾@ .05
Mixed tubes .....*lb.*	.04¼@

World Rubber Absorption—Net Imports

	Total 1928	Long Tons—1929 Jan.	Feb.	Mar.	Apr.
Australia	8,430	1,061	1,131	725	.....
Belgium	7,958	749	627	931	.....
Canada	30,447	3,759	2,908	4,961	3,177
Czechoslovakia	3,138	525	356	409	.....
Denmark	566	38	49	60	62
Finland	768	62	34	5	104
France	36,498	5,645	5,001	4,409	.....
Germany	37,855	4,711	4,613	4,586	5,351
Italy	12,433	1,481	1,259	1,515	1,407
Japan	25,621	3,776	2,727	2,630	.....
Netherlands	2,243	218	113	316	144
Norway	728	70	48	55	.....
Russia	15,134	956	689	1,250	.....
Spain	3,178	179	115	80	.....
Sweden	2,356	468	95	234	727
United Kingdom	4,846	11,951	5,179	9,068	8,295
United States	404,496	53,922	61,331	46,391	52,447
U. S. (Guayule)	3,076	—	—	—	83
Totals	599,771	89,571	86,275	77,625	.....

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Production—Net Exports

	Total 1928	Long Tons—1929 Jan.	Feb.	Mar.	Apr.	May
British Malaya:						
Gross exports	409,500	52,546	47,926	49,448	49,816	43,960
Imports	149,787	13,415	12,103	14,553	11,414	15,593
Net	259,713	39,131	35,823	34,895	38,402	28,367
Ceylon	57,267	8,301	6,943	6,713	4,676	4,850
India and Burma	10,790	1,664	1,117	1,413	727	....
Sarawak	10,087	873	955	758	747	966
B. N. Borneo	6,698	*500	*500	*500	*500	....
Siam	4,813	461	495	499	306	453
Java and Madura	58,848	5,640	6,572	5,515	5,997	....
Sumatra East Coast	82,511	8,067	7,511	6,620	6,645	....
Other N. E. Indies	121,671	11,535	10,384	10,629	11,321	....
French Indo-China	9,616	395	965	741	568	650
Amazon Valley	21,129	2,134	2,104	2,332	1,950	1,922
Other America	1,490	68	179	....	....	....
Mexican Guayule	3,076	—	—	—	83	....
Africa	6,124	574	341	....	....	....
Totals	653,833	79,343	73,889	....	....	....

* Estimated.

Complied by Rubber Division, Department of Commerce, Washington, D. C.

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	March, 1929		Three Months Ended March, 1929	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	113,353,589	$20,380,905	*386,348,838	*$68,030,967
Liquid latex	12,178	2,568	.....	.....
Balata	202,569	75,444	498,892	179,948
Jelutong or Pontianak	957,910	122,026	3,885,344	529,880
Gutta percha	2,497	1,140	401,868	83,896
Siak, scrap and reclaimed	1,726,065	38,325	5,055,553	110,594
Totals	116,254,808	$20,620,408	396,190,495	$68,935,285
Chicle *dutiable*	1,964,888	$998,671	5,134,629	$2,561,407
MANUFACTURED—*Dutiable*				
Belting	5,963	$2,970	12,367	$6,100
Tires	57	2,844	97	3,711
Other manufactures of rubber	.....	190,994	.....	560,055
Totals	6,020	$196,808	12,464	$569,866

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	9,449,153	$2,094,037	24,274,650	$5,242,221
Balata	3,309	1,418	40,705	16,229
Gutta percha, rubber substitutes and scrap	.....	.....	22,473	4,045
Rubber manufactures	.....	27,750	.....	39,670
Totals	9,452,462	$2,123,205	24,337,828	$5,302,165

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	3,010,888	$205,759	7,422,429	$514,621
Scrap and old	4,789,114	228,446	12,845,340	625,101
Rubberized automobile cloth, *sq. yd.*	268,611	138,679	750,140	378,390
Other rubberized piece goods and hospital sheeting *sq. yd.*	179,777	77,273	463,599	206,340
Footwear				
Boots *pairs*	70,655	176,883	244,049	566,455
Shoes *pairs*	205,523	154,970	526,307	432,263
Canvas shoes with rubber soles *pairs*	701,579	469,161	1,785,527	1,144,585
Soles *doz. pairs*	9,075	29,603	42,474	115,832
Heels *doz. pairs*	185,290	118,522	448,895	321,297
Water bottles and fountain syringes *number*	21,204	13,292	94,692	67,746
Gloves *doz. pairs*	13,320	35,071	27,427	72,544
Other druggists' sundries	.....	36,065	.....	105,280
Balloons *gross*	64,105	62,885	191,791	191,332
Toys and balls	.....	17,491	.....	41,891
Bathing caps *doz.*	38,467	80,142	58,177	134,763
Bands	39,388	21,578	135,204	70,356
Erasers	48,300	31,431	143,063	91,855
Hard rubber goods				
Electrical goods	243,149	28,557	610,728	79,925
Other goods	.....	38,734	.....	96,407
Tires				
Casings, auto *number*	300,035	3,686,338	895,592	10,579,673
Truck and bus casings, 6 inches and over, *number*	29,924	776,778	81,183	2,050,479
Other automobile casings *number*	270,111	2,909,560	814,409	8,529,194
Tubes, auto *number*	201,403	382,881	600,371	1,075,095
Other casings and tubes *number*	17,327	21,602	47,810	101,684
Solid tires for automobiles and motor trucks, *number*	4,554	133,655	13,640	407,433
Others	212,327	35,402	442,642	81,058
Tire accessories	.....	169,393	.....	443,395
Rubber and friction tape	134,400	41,517	439,591	131,464
Belting	578,298	295,316	1,427,898	749,749
Hose	815,816	257,218	2,320,893	774,232
Packing	338,934	136,019	774,590	341,022
Thread	139,050	138,865	411,543	441,092
Other rubber manufactures	.....	377,743	.....	1,045,396
Totals	.....	$11,326,829	.....	$32,007,949

*Liquid latex included.

London Stocks, April, 1929

	Landed for Apr. Tons	Delivered for Apr. Tons	Stocked April 30 1929 Tons	1928 Tons	1927 Tons
LONDON					
Plantation	8,551	5,405	31,226	53,285	66,686
Other grades	9	11	81	88	133
LIVERPOOL					
Plantation	†1,100	†836	†4,590	†2,485	†2,901
Total tons, London and Liverpool	9,660	6,252	35,897	55,858	69,720

†Official returns from the seven recognized public warehouses.

United Kingdom Statistics

IMPORTS

UNMANUFACTURED Crude Rubber From—	April, 1929 Pounds	Value	Four Months Ended April, 1929 Pounds	Value
Straits Settlements	13,532,700	£618,103	55,364,000	£2,422,818
Federated Malay States	5,354,900	242,615	24,354,700	1,082,521
British India	1,033,500	47,616	4,671,800	213,888
Ceylon and Dependencies	2,543,400	121,457	13,359,500	619,339
Other Dutch possessions in Indian Seas	1,781,900	81,971	9,345,900	435,976
Dutch East Indies (except other Dutch possessions in Indian Seas)	2,814,300	128,521	8,478,900	382,056
Other countries in East Indies and Pacific not elsewhere specified	218,700	10,058	743,300	33,059
Brazil	576,800	27,811	2,774,600	123,588
South and Central America (except Brazil)	83,100	3,771	123,400	5,426
West Africa				
French West Africa	5,600	254	57,700	1,548
Gold Coast	33,600	1,636	153,800	6,868
Other parts of West Africa	167,000	7,442	894,400	37,836
East Africa, including Madagascar	119,100	5,332	351,200	15,605
Other countries	122,300	5,970	330,000	14,617
Totals	28,386,900	£1,302,557	121,003,200	£5,395,145
Gutta percha and balata	189,100	17,144	1,763,600	129,846
Waste and reclaimed rubber	1,133,000	11,625	3,647,000	39,196
Rubber substitutes	13,800	497	35,300	944
Totals	29,722,800	£1,331,823	126,449,100	£5,565,131
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£37,290	.....	£189,313
Inner tubes	.....	8,974	.....	30,829
Solid tires	.....	11,532	.....	33,080
Boots and shoes *doz. pairs*	114,025	131,026	388,904	481,034
Other rubber manufactures	.....	183,597	.....	668,453
Totals	.....	£372,419	.....	£1,402,709

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	2,753,100	£23,383	11,434,300	£86,372
Rubber substitutes	48,800	1,012	249,500	5,238
Totals	2,801,900	£24,395	11,683,800	£91,610
MANUFACTURED				
‡Tires and tubes				
Pneumatic				
Outer covers	.....	£250,889	.....	£983,010
Inner tubes	.....	40,669	.....	160,959
Solid tires	.....	12,274	.....	48,736
Boots and shoes *doz. pairs*	34,593	50,092	100,348	162,340
Other rubber manufactures	.....	248,555	.....	922,857
Totals	.....	£602,479	.....	£2,277,902

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber To—				
Russia	761,800	£39,058	2,053,700	£90,954
Sweden, Norway and Denmark	224,200	10,623	834,000	37,849
Germany	4,309,900	212,377	13,274,100	585,238
Belgium	749,400	37,190	3,409,500	146,845
France	2,366,000	118,327	13,551,800	601,637
Spain	58,100	2,997	668,100	30,469
Italy	557,100	28,527	3,160,000	150,376
Other European countries	373,800	17,810	2,196,900	97,451
United States	272,500	13,372	3,925,300	161,656
Canada	700	35	700	35
Other countries	132,400	7,329	665,300	34,164
Totals	9,805,900	£487,645	43,739,400	£1,936,674
Gutta percha and balata	49,000	4,512	452,200	30,805
Waste and reclaimed rubber	38,200	630	130,400	2,002
Rubber substitutes	.....	.....	700	38
Totals	9,893,100	£492,787	44,322,700	£1,969,519
MANUFACTURED				
*‡Tires and tubes				
Pneumatic				
Outer covers	.....	£1,687	.....	£18,932
Inner tubes	.....	554	.....	3,151
Solid tires	.....	577	.....	963
Boots and shoes *doz. pairs*	1,928	4,149	4,728	11,985
Other rubber manufactures	.....	5,259	.....	23,501
Totals	.....	£12,226	.....	£58,532

*After April 12, 1927, tires and tubes imported or exported with complete vehicle or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts and accessories were exempt from duty until Apr. 30, 1926, inclusive, and rubber tires and tubes until Apr. 11, 1927, inclusive.

‡Tires and tubes included prior to Apr. 12, 1927.

Compounding Ingredients

THE demand for compounding ingredients was maintained strong and active by the heavy manufacturing schedules effective in the tire section of the industry. It is probable that some diminution of tire and tube production will take place as that is customary to some degree in midsummer, especially if the rate of automobile production slackens.

Mechanical rubber goods production as well as that of other lines is gaining rather than decreasing in tonnage output. The footwear and weatherproof plants are seasonally busy.

ACCELERATORS. July brings announcement by one of the large manufacturers of rubber chemicals, of Butene, a new accelerator of wide utility and interest.

ANTIOXIDANTS. These materials were slower to find general acceptance than accelerators. They are, however, highly efficient for their specialized function of preserving the original quality of rubber goods against deterioration by various agencies of deterioration, each one having special preservative effect after its own chemical nature.

BENZOL. The market is firm. There has been a slight decrease in rate of production and much of the supply is going into motor fuel consumption. Price remains unchanged.

CARBON BLACK. There exists an excellent demand by the rubber industry. Supplies, however, are ample and prices firm.

CLAY. This enters extensively into tire-tread compositions as the best low-cost reenforcing ingredient. It rivals whiting in the matter of cheapness and is extensively used in mechanicals.

LITHARGE. Movement of litharge is improving and the price is firmer.

LITHOPONE. Contract movement is reported good to fair and price steady.

MINERAL RUBBER. The consumption of MR is increasing notwithstanding the introduction of many softeners, probably because it functions as a valuable rubber adjuvant when used with discretion.

SOFTENERS. A wide choice is offered in this type of compounding ingredient of which several new ones of merit have recently been introduced.

V. M. P. NAPHTHA. This is the grade commonly employed in the rubber trade for cement making and spreader work. The price has advanced to 12 cents a gallon with consumer demand active.

STEARIC ACID. Late in May the price declined ¼-cent a pound. Later a strong demand developed and the price is now steady at the increase.

ZINC OXIDE. Good contract movement was reported just previous to one month ago. Since then the demand has increased and the price is firm.

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09	@
Lead, red	lb.	.10½	@
sublimed white	lb.	.08½	@
sublimed blue	lb.	.08½	@
super-sublimed white lead	lb.	.08¾	@
Lime, R. M. hydrated	ton	20.00	@
Litharge	lb.	.09½	@
Magnesia, calcined heavy	lb.	.04¼	@
Magnesia carbonate	lb.	.08¾	@ .11
Orange mineral A.A.A.	lb.	.12½	@

Accelerators, Organic

A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.	.80	@ .95
Aldehyde ammonia	lb.	.65	@ .70
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.		@
Paste	lb.		@
D. B. A.	lb.	2.00	@
Di-ortho-tolylguanidine	lb.	.42	@ .47
D. P. G.	lb.	.30	@ .35
Ethylidine aniline	lb.	.45	@ .47½
Formaldehyde aniline	lb.		@
Grasselerater 102	lb.		@
552	lb.		@
808	lb.		@
833	lb.		@
Heptene	lb.	.40	@
Hexamethylenetetramine	lb.	.62½	@ .65
Lead oleate, No. 999	lb.	.15½	@
Witco	lb.	.14	@
Lithex	lb.	.18	@ .20
Methylene dianiline	lb.	.37½	@ .40
Monex	lb.	3.25	@
Plastone	lb.		@
R-2	lb.	2.00	@ 2.50
R. & H. 40	lb.	.40	@ .42½
50	lb.	.40	@ .42½
Safex	lb.	1.20	@
Super-sulphur, No. 1	lb.		@
No. 2	lb.		@
Tensilac No. 39	lb.	.40	@ .42½
No. 41	lb.	.50	@ .52½
Thermlo F.	lb.	.50	@ .55
Thiocarbanilid	lb.	.23	@ .27
Trimene	lb.	.75	@
base	lb.	1.20	@
Tuads	lb.		@
ZBX	lb.	2.50	@
Z-88	lb.	.50	@ .60
Zimate	lb.		@

Acids

Acetic 28% (bbls.)	100 lbs.	3.88	@ 4.13
glacial (carboys)	100 lbs.	14.18	@14.43
Sulphuric, 66°	100 lbs.	1.60	@

Alkalies

Caustic soda, 76% solid,	100 lbs.	2.75	@ 3.00

Antioxidants

Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Albasan	lb.	.75	@
Antox	lb.		@

New York Quotations

June 25, 1929

Antioxidants—*(Continued)*

Grasselerager A	lb.		@
Resistox	lb.	$0.54	@ $0.65
Stabilite	lb.	.64	@
Sunproof	lb.	.37½	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.07	@
Carbon (see compounding ingredients)			
Drop	lb.	.05½	@ .15
Lampblack (commercial)	lb.	.07	@ .08

BLUE

Akco blue	lb.	1.80	@
Huber Brilliant	lb.	4.20	@ 4.70
Prussian	lb.	.35	@ .37
Ultramarine	lb.	.06	@ .30

BROWN

Huber Mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

Akco green	lb.	2.60	@
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Huber Brilliant	lb.	4.35	@
Oxide of chromium	lb.	.31	@ .38

ORANGE

Huber Persian	lb	.50	@ 1.00

RED

Akco red	lb.	2.75	@
Antimony			
Crimson	lb.	.50	@ .55
Sulphur free	lb.	.58	@ .65
Crimson, R. M. P. No. 3	lb.	.48	@
Sulphur, free	lb.	.52	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Golden, No. 40	lb.		@
No. 60	lb.		@
15/17%	lb.	.21	@ .23
7-A	lb.	.35	@
Z-2	lb.	.22	@
Aristi	lb.	2.75	@
Huber Brilliant	lb.	1.35	@ 1.85
Iron Oxides			
bright pure domestic	lb.	.12	@
bright pure English	lb.	.12	@
bright reduced English	lb.	.10	@
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.10½	@
Indian (maroon), reduced English	lb.	.07	@
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.04	@
Sunburnt red	lb.	.14¼	@
Venetian reds	lb.	.02	@
Vermilion, Eng. quicksilver	lb.	1.95	@

Colors—*(Continued)*

WHITE

Lithopone	lb.	$0.05½	@
Albalith	lb.		@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05¾
Sterling	lb.		@
Vanolith	lb.	.05½	@
Titanox	lb.	.09½	@ .10
Zinc Oxide			
AAA (lead free)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06½	@ .06¾
Z (8% leaded)	lb.	.06¼	@ .06¾
Green seal	lb.		@
Kadox	lb.		@
Red seal	lb.		@
Special	lb.		@
White seal	lb.		@
XX green label	lb.		@
XX red label	lb.		@

YELLOW

Akco yellow	lb.	1.45	@
Cadmium sulphide	lb.	.95	@ 1.75
Chrome	lb.	.17	@ .17½
Grasselli cadmium	lb.		@
Huber canary	lb.	3.30	@ 3.80
Ochre, domestic	lb.	.01½	@ .02½
Ochre, French	lb.	.02	@
Oxide, pure	lb.	.08½	@
Zinc, C. P., imported	lb.	.23	@

Compounding Ingredients

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carb. pwd.	lb.	.11	@
lump	lb.	.10½	@
Asbestine	ton	25.00	@
Barium, carbonate	ton	60.00	@
Baryta white (f.o.b. St. Louis, bbls.)	ton	23.00	@
Baryta white (f. o. b. St. Louis, paper bags)	ton	22.20	@
Barytes, pure white	ton	35.00	@
off color	ton	25.00	@
medium	ton	27.50	@
Foam "A" (f. o. b. St. Louis, bbls.)	ton	23.00	@
Foam "A" (f. o. b. St. Louis, bags)	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	42.50	@45.00
Carbon Black			
Aerfloted arrow	lb.	.08½	@ .12
Compressed	lb.	.08½	@ .12½
Fumonex	lb.	.06	@ .09
Micronex	lb.	.09	@ .13
Uncompressed	lb.	.08	@ .12
Velvetex	lb.	.04½	@ .06
Carrara filler	ton		@
Chalk	ton	12.00	@
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01¼	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	25.00	@
Suprex	ton	10.00	@22.00
Tensulite	ton	10.00	@

Compounding Ingredients (Continued)

Cotton flock, black	lb.	$0.13	@
light-colored	lb.	.10	@ .11
white	lb.	.12	@ .25
Glue, high grade	lb.	.25	@ .30
low grade	lb.	.16	@ .22
Infusorial earth	ton	35.00	@
Mica, amber (fact'y)	lb.	.04½	@
Neomerpin, S. A. conc.	lb.	.60	@
Pumice stone, powd.	lb.	.02½	@ .04
Rottenstone (bbls.)	lb.	.02½	@ .04½
Shellac, fine orange	lb.	.33	@
Soapbark	lb.	.13½	@ .14
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	25.00	@
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Whiting			
Domestic	100 lbs.	1.00	@
English, cliffstone	100 lbs.	1.50	@
Imported chalk	100 lbs.	.95	@ 1.10
Paris White, English cliffstone	100 lbs.	1.25	@ 1.50
Quaker	ton		@
Slate flour, gray (fact'y)	ton	7.00	@
Snow white	ton		@
Sussex	ton		@
Vancolloid	ton	27.00	@
Vansulite	ton	14.00	@
Westminster Brand	100 lbs.		@
Witco (l. c. l.) (f. o. b. New York)	ton	20.00	@

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	.05	@ .06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kapak, M. R.	ton	40.00	@90.00
M 4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fact'y)	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00
Vansul Puro	ton	24.00	@

New York Quotations

June 25, 1929

Oils

Kerosene	gal.	$0.15	@
Mineral	gal.	.20	@
Poppy seed oil	gal.	1.70	@ 1.80
Rapeseed	gal.	.85	@
Red oil, distilled	lb.	.10⅜	@ .10⅞
Rubber process	gal.	.25	@
Spindle	gal.	.30	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.07½	@ .15
White	lb.	.08¼	@ .16

Softeners

Burgundy pitch	100 lbs.	5.00	@ 6.00
Atlas	100 lbs.	6.50	@
Corn oil	lb.	.10	@
Cottonseed oil	lb.	.10½	@
Cycline oil	gal.	.26	@ .34
Degras	lb.	.03½	@ .04¼
Fluxrite (fluid)	lb.	.05	@ .06
Moldrite	lb.	.07½	@ .08
Palm oil (Lagos)	lb.	.09	@
Palm oil (Niger)	lb.	.08½	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08½	@ .08⅝
Pigmentar	lb.	.038	@ .0446
Pigmentaroil	lb.	.03	@ .0366
Pine oil, steam distilled	gal.	.62	@ .63
Pine tar (retort)	bbl.	11.50	@12.00
Rosin K	bbl.	8.45	@
Rosin oil, compounded	gal.	.30	@
No. 3, deodorized	gal.	.58	@
No. 556, deodorized	gal.	.49	@
Rubite	lb.	.10	@
Rubtack	lb.	.08¼	@
Stearex	lb.	.15½	@ .20
Stearic acid, double pressed	lb.	.15¼	@ .15¾
Tackol	lb.	.09	@ .15
Tasco W-S No. 1	lb.		@
A	lb.		@
Vansulol	lb.	.12	@
Vantar (Pine Tar)	gal.	.35	@
Waxene	lb.	.30	@ .40
Witco No. 20	gal.	.17	@
Woburn oil	lb.	.05½	@ .06

Solvents

Benzol (90% drums)	gal.	$0.28	@
Carbon bisulphide (drums)	lb.	.05¼	@ .08
tetrachloride (drums)	lb.	.06½	@ .10
Cyclohexanone	lb.	.70	@
Dip-Sol	gal.	.14	@
Dryolene, No. 9	gal.	.11½	@
Gasoline			
No. 303			
Tankcars	gal.	.15	@
Drums, c. l.	gal.		@
Drums, l. c. l.	gal.		@
Hexalin	lb.	.60	@
acetate	lb.	.70	@
Rub-Sol	gal.	.11	@
Solvent naphtha	gal.	.35	@
Stod-Sol	gal.	.11½	@
Sweet rubber cement naphtha	gal.	.16½	@
Turpentine, Venice	lb.	.20	@
steam distilled	gal.	.48	@ .52

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.	2.40	@ 2.75
(l.c.l.)	100 lbs.		@
Superfine commercial flour (210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.40	@ 2.80
Tire brand, superfine,	100 lbs.	1.90	@ 2.25
Tube brand, velvet	100 lbs.	2.40	@ 2.75
Sulphur chloride	lb.	.03½	@ .04
Vandex (selenium)	lb.		@
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.50	@ .55
carnauba	lb.	.39	@ .40
ceresine, white	lb.	.10	@ .11
montan	lb.	.07	@ .07½
ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30
Paraffin			
122/124 white crude scale	lb.	.03¾	@
124/126 white crude scale	lb.	.04	@
120/122 fully refined	lb.		@
125/127 fully refined	lb.	.05	@

Rims Approved by Tire & Rim Association

Rim Size	May, 1929 Number	May, 1929 Per Cent	5 Months, 1929 Number	5 Months, 1929 Per Cent
Motorcycle				
24 x 3 "CC"	....	..	9,038	0.1
24 x 3 Std.	468	0.0	4,668	0.0
26 x 3 "CC"	....	..	1,283	0.0
26 x 3 Std.	1,035	0.0	1,035	0.0
28 x 3 "CC"	....	..	1,020	0.0
18 x 3 SS	5,528	0.2	5,528	0.0
19 x 3 SS	7,039	0.3	7,039	0.1
Clincher				
30 x 3½	6,777	0.3	119,197	1.0
18" Balloons				
18 x 4	169,918	6.6	670,630	5.8
18 x 3.25	19,896	0.8	75,681	0.6
18 x 4½	46,522	1.8	181,443	1.5
18 x 5	6,097	0.2	23,484	0.2
19" Balloons				
19 x 2.75	48,640	1.9	195,879	1.6
19 x 3½	42,022	1.6	417,807	3.5
19 x 4	440,069	17.2	2,424,303	20.2
19 x 3.25	40,344	1.3	161,583	1.4
19 x 4½	55,409	2.2	288,569	2.4
19 x 5	24,079	0.9	59,253	0.5
20" Balloons				
20 x 2.75	775,239	30.1	3,038,106	25.3
20 x 3½	5,595	0.2	62,217	0.5
20 x 4	194,515	7.6	1,211,399	10.1
20 x 4½	24,933	1.0	211,237	1.8
20 x 5	31,973	1.3	217,036	1.8
20 x 6	528	0.0	34,983	0.3
20 x 6.75	411	0.0	12,206	0.1
21" Balloons				
21 x 2.75	11,843	0.5	93,620	0.8
21 x 3½	16,657	0.6	139,703	1.2
21 x 4	7,500	0.3	35,880	0.3
21 x 4½	4,294	0.2	19,489	0.2
21 x 5	1,383	0.1	3,144	0.0
21 x 6	....	..	1,017	0.0
22" Balloons				
22 x 4	....	..	501	0.0
22 x 4½	496	0.0	496	0.0
High Pressure				
30 x 3½—23	5,800	0.2	16,650	0.1
32 x 4½—23	7,181	0.3	25,177	0.2
32 x 4—24	4,453	0.2	11,619	0.1
32 x 3½—25	1,056	0.0	1,056	0.0
34 x 4½—25	101	0.0	2,181	0.0
20" Truck				
30 x 5	455,958	17.7	1,745,948	14.5
32 x 6	45,954	1.8	231,656	1.9
34 x 7	25,549	1.0	85,706	0.7
36 x 8	14,385	0.6	62,505	0.5
40 x 10	....	..	304	0.0
22" Truck				
36 x 7	892	0.0	1,924	0.0
38 x 8	3,227	0.1	6,199	0.1
24" Truck				
34 x 5	1,260	0.0	3,064	0.0
36 x 6	1,431	0.1	21,038	0.2
38 x 7	6,330	0.3	26,367	0.2
40 x 8	6,385	0.3	34,337	0.3
44 x 10	....	..	246	0.0
Airplane				
8 x 3	45	0.0	245	0.0
12 x 3	102	0.0	737	0.0
14 x 3	20	0.0	20	0.0
18 x 3	87	0.0	581	0.0
16 x 3½	52	0.0	1,616	0.0
20 x 3½	1,663	0.1	2,264	0.0
20 x 4	113	0.0	514	0.0
20 x 5	....	..	211	0.0
20 x 6	11	0.0	368	0.0
20 x 8	14	0.0	410	0.0
24 x 10	....	..	109	0.0
18 x 4 Clincher	2,945	0.1	6,797	0.1
Totals	2,574,224	..	12,017,743	..

Cotton and Fabrics

AMERICAN COTTON. The price of spot middling cotton on June 1 was 18.40 cents compared with 19.55 cents on May 1. June 2 the price rose to 18.75 and for the first three weeks of the month kept very close to the 19-cent level dropping on June 21 to 18.45 cents.

The crop's progress is reported excellent. However, fears of weevil damage are growing. The first report of the United States Department of Agriculture disclosed the heaviest emergence to June 1 of record, averaging approximately 8 to 10 times as large as last year. This is a matter of great importance as it is liable, if uncontrolled by dry weather or cultural activities, to reduce in marked degree the production of cotton per acre.

The three factors on which crop estimates hinge at present are acreage planted, progress of cultivation, and ultimate weevil infestation. Apparently none of these factors have developed sufficiently to admit of reliable estimates on the probable size and quality of the ultimate crop. The development of these field factors has a strong influence on the current market activity and price.

Of many market opinions daily expressed the following are typical: "The probabilities favor a higher price level before this crop is harvested," and "Sentiment is bearish; selling not aggressive and apprehension is felt over the effect of wet weather."

EGYPTIAN COTTON. During the past month there has been very little change in the basis of staples although certain lengths, particularly in the better grades, are exceedingly hard to buy. On the other hand, the progress of the staple crops in this country and Egypt has thus far been satisfactory and spinners are generally waiting for some sort of encouragement before committing themselves for new crop shipments.

The past year has witnessed a surprisingly heavy consumption of staple cottons both here and abroad due, no doubt, to the cheap basis at which they were bought at the beginning of the season. It is certain that a very large crop of staples will have to be produced this year if the present consumption is to continue.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The market is comparatively quiet and demand fair. Cloths were never so low priced as at present, compared with the raw material cost. Both jobbers' and consumers' stocks are small. A resumption of heavy contract trading is very likely during the year's third quarter in order to insure sufficient consumer supplies.

RAINCOAT FABRICS. As the result of warm dry weather the raincoat business during the past month has been at a standstill. Fall business will start as usual after July 1.

SHEETINGS. Goods are being sold on a very close margin of profit for the mills, and contracts for deliveries during the latter part of the third quarter, or the fourth quarter are not acceptable. Curtailment of production will probably occur for a week during July, August, and September. Good business is anticipated for the last quarter of the year.

TIRE FABRICS. The weekly totals of sales during June averaged fair for the season. There was moderate inquiry for Egyptians. Orders for fabric were small and for filling-in purposes. On the whole the demand has been light and prices firm and unchanged. Early in the month fabric mills experienced difficulty in securing 1 1/16-inch cotton. Some of them were paying a premium for it and passing the increased cost on to the tire manufacturers. Curtailment of production of one week is considered likely to occur in the fabric mills in July.

New York Quotations

June 25, 1929

Drills

38-inch 2.00-yard	yard	$0.16¾ @
40-inch 3.47-yard		.10⅛ @
50-inch 1.52-yard		.22⅜ @
52-inch 1.90-yard		.18⅛ @
52-inch 2.20-yard		.15⅞ @
59-inch 1.85-yard		.19½ @

Ducks

38-inch 2.00-yard D. F.	yard	.17½ @
40-inch 1.45-yard S. F.		.23¾ @
72-inch 1.05-yard D. F.		.36⅝ @
72-inch 16.66-ounce		.39½ @
72-inch 17.21-ounce		.40⅜ @

MECHANICAL

Hose and belting	pound	.37 @

TENNIS

52-inch 1.35-yard	yard	.26½ @

Hollands

R.T.5—30-inch	yard	.16 @
R.T.7—36-inch		.18 @
R.T.8—40-inch		.20 @
48A—32-inch		.12½ @
48A—40-inch		.15½ @

RED SEAL

36-inch		.15½ @
40-inch		.16½ @
50-inch		.25 @

GOLD SEAL

40-inch, No. 72		.20¾ @
40-inch, No. 80		.22 @

Osnaburgs

40-inch 2.35-yard	yard	$0.14½ @
40-inch 2.48-yard		.13¾ @
40-inch 3.00-yard		.11½ @
40-inch 10-oz. part waste	lb.	.18¼ @
40-inch 7-oz.	lb.	.12¾ @
37-inch 2.42-yard	yard	.14 @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	.10¾ @
Bombazine 60 x 48		.09¾ @
Plaids 60 x 48		.12½ @
Plaids 48 x 48		.11½ @
Surface prints 64 x 60		.13½ @
Surface prints 60 x 48		.12½ @
Print cloth, 38½-in., 60 x 48		.06¼ @
Print cloth, 38½-in., 64 x 60		.07¼ @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.12¼ @	
48 x 48, 2.85-yard		.10¾ @	
64 x 68, 3.15-yard		.11 @	.11⅛
56 x 60, 3.60-yard		.09¼ @	.09⅜
44 x 48, 3.75-yard		.08 @	.08¼
44 x 40, 4.25-yard		.07⅛ @	

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.06⅝ @	
44 x 40, 6.15-yard		.05½ @	.05⅝

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Peeler, karded	pound	$0.47 @

BUILDER 23/11

Peeler, karded	pound	.47 @

BUILDER 10/5

Peeler, karded	pound	.44 @

CORD 23/5/3

Peeler, karded, 1 1/16-in.	pound	.47 @

CORD 23/4/3

Peeler, karded	pound	.49 @

CORD 23/3/5

Peeler, karded	pound	.50 @

CORD 15/3/5

Peeler, karded	pound	.45 @

CORD 13/3/3

Peeler, karded	pound	.44 @

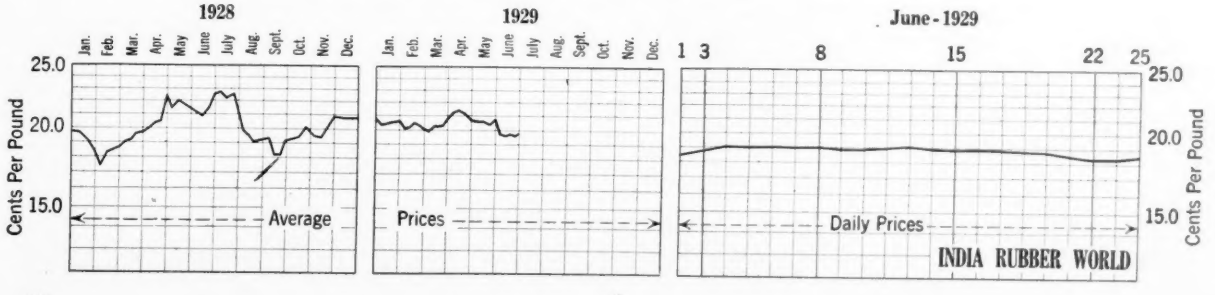
LENO BREAKER

8-oz. Peeler, karded	pound	.47 @
10-oz. Peeler, karded		.47 @

CHAFER

9.5-oz. Peeler, karded	pound	.47 @
12-oz. Peeler, karded		.47 @
14-oz. Peeler, karded		.47 @

Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton



Crude Rubber Arrivals at New York as Reported by Importers

Plantations

MAY 15. By "Silverbeech," Far East.

	Cases
Robert Badenhop Corp.....pkgs.	1,154
Baird Rubber & Trading Co., Inc.....	1,437
General Rubber Co.....	10,126
Hood Rubber Co.....	*76
Lavino American & Asiatic Co.....	450
The Meyer & Brown Corp.....	1,457
The Meyer & Brown Corp.....	*325
H. Muehlstein & Co., Inc.....	985
Poel & Kelly, Inc.....	250
Poel & Kelly, Inc.....	*100
Chas. T. Wilson Co., Inc.....	1,004

MAY 16. By "Agapenor," Far East.

Poel & Kelly, Inc.....	*250

MAY 16. By "Lorenzo," Far East.

The Meyer & Brown Corp.....	*70

MAY 16. By "New Amsterdam," Far East.

The Meyer & Brown Corp.....	136

MAY 17. By "Steel Exporter," Far East.

Robert Badenhop Corp.....pkgs.	848
Baird Rubber & Trading Co., Inc.....	1,600
Bierrie & Co., Inc.....	146
General Rubber Co.....	7,261
B. W. Henderson & Co., Inc.....	50
Littlejohn & Co., Inc.....	2,711
The Meyer & Brown Corp.....	1,675
H. Muehlstein & Co., Inc.....	135
Poel & Kelly, Inc.....	200
Raw Products Co.....	50
Rogers Brown & Crocker Bros., Inc.....	1,795
Chas. T. Wilson Co., Inc.....	165

MAY 19. By "Bowes Castle," Far East.

H. A. Astlett & Co.....	2,795
Robert Badenhop Corp.....pkgs.	860
Baird Rubber & Trading Co., Inc.....	340
Bierrie & Co., Inc.....	70
General Rubber Co.....	7,256
Haldane & Co., Inc.....	350
Lavino American & Asiatic Co.....	220
Littlejohn & Co., Inc.....	5,132
The Meyer & Brown Corp.....	1,793
The Meyer & Brown Corp.....	*250
H. Muehlstein & Co., Inc.....	1,600
Poel & Kelly, Inc.....	250
Raw Products Co.....	280
Rogers Brown & Crocker Bros., Inc.....	1,625
Chas. T. Wilson Co., Inc.....	806

MAY 19. By "Pres. Madison," Far East.

Robert Badenhop Corp.....pkgs.	574
Haldane & Co., Inc.....	†500
Littlejohn & Co., Inc.....	†524
Rogers Brown & Crocker Bros., Inc.....	†350

MAY 20. By "Chinese Prince," Far East.

H. A. Astlett & Co.....	1,079
Robert Badenhop Corp.....pkgs.	890
Baird Rubber & Trading Co., Inc.....	2,078
Bierrie & Co., Inc.....	97
General Rubber Co.....	11,105
Haldane & Co., Inc.....	542
B. W. Henderson & Co., Inc.....	200
Lavino American & Asiatic Co.....	50
Littlejohn & Co., Inc.....	8,166
The Meyer & Brown Corp.....	985
The Meyer & Brown Corp.....	*315
Poel & Kelly, Inc.....	390
Raw Products Co.....	300
Rogers Brown & Crocker Bros., Inc.....	2,038
Chas. T. Wilson Co., Inc.....	1,060

MAY 20. By "Silveray," Far East.

H. A. Astlett & Co.....	†1,020
Littlejohn & Co., Inc.....	†1,685
The Meyer & Brown Corp.....	†770

MAY 20. By "Veendam," Holland.

General Rubber Co.....	212

MAY 21. By "Caronia," London.

General Rubber Co.....	140
Littlejohn & Co., Inc.....	214
Rogers Brown & Crocker Bros., Inc.....	28

MAY 21. By "Djambi," Far East.

H. A. Astlett & Co.....	1,065
Robert Badenhop Corp.....pkgs.	402
Baird Rubber & Trading Co., Inc.....	231
Bierrie & Co., Inc.....	578
General Rubber Co.....	2,504
Haldane & Co., Inc.....	200
B. W. Henderson & Co., Inc.....	136
Lavino American & Asiatic Co.....	66
Littlejohn & Co., Inc.....	576
The Meyer & Brown Corp.....	326
H. Muehlstein & Co., Inc.....	1,300
Poel & Kelly, Inc.....	51
Raw Products Co.....	66
Rogers Brown & Crocker Bros., Inc.....	1,295
Chas. T. Wilson Co., Inc.....	322

MAY 21. By "Minnetonka," Far East.

Littlejohn & Co., Inc.....	695
The Meyer & Brown Corp.....	1,001
Chas. T. Wilson Co., Inc.....	156

* Arrived at Boston.
† Arrived at Los Angeles.

MAY 21. By "Samaria," England.

	Cases
The Meyer & Brown Corp.....	135
Chas. T. Wilson Co., Inc.....	61

MAY 22. By "American Farmer," England.

General Rubber Co.....	75

MAY 23. By "City of Dunkirk," Far East.

H. A. Astlett & Co.....	2,986
Robert Badenhop Corp.....pkgs.	455
Baird Rubber & Trading Co., Inc.....	1,410
Baird Rubber & Trading Co., Inc.....	*250
Bierrie & Co., Inc.....	1,369
General Rubber Co.....	5,872
B. W. Henderson & Co., Inc.....	200
Hood Rubber Co.....	*128
Lavino American & Asiatic Co.....	180
Littlejohn & Co., Inc.....	2,874
The Meyer & Brown Corp.....	2,540
The Meyer & Brown Corp.....	*310
H. Muehlstein & Co., Inc.....	1,800
Poel & Kelly, Inc.....	285
Raw Products Co.....	50
Rogers Brown & Crocker Bros., Inc.....	1,989
Rogers Brown & Crocker Bros., Inc.....	*250
Chas. T. Wilson Co., Inc.....	602

MAY 24. By "Shinyo Maru," Far East.

H. A. Astlett & Co.....	†355
The Meyer & Brown Corp.....	†212

MAY 25. By "Golden Mountain," Far East.

The Meyer & Brown Corp.....	†500

MAY 25. By "Salawati," Far East.

H. A. Astlett & Co.....	2,039
Robert Badenhop Corp.....pkgs.	449
Baird Rubber & Trading Co., Inc.....	728
Bierrie & Co., Inc.....	576
General Rubber Co.....	6,660
Haldane & Co., Inc.....	566
B. W. Henderson & Co., Inc.....	25
Lavino American & Asiatic Co.....	50
Littlejohn & Co., Inc.....	2,008
The Meyer & Brown Corp.....	441
The Meyer & Brown Corp.....	*135
H. Muehlstein & Co., Inc.....	240
Poel & Kelly, Inc.....	174
Raw Products Co.....	203
Rogers Brown & Crocker Bros., Inc.....	1,509
Chas. T. Wilson Co., Inc.....	1,387

MAY 27. By "Lancastria," England.

General Rubber Co.....	28

MAY 27. By "Macharda," Far East.

General Rubber Co.....	1,713
The Meyer & Brown Corp.....	150
Chas. T. Wilson Co., Inc.....	126

MAY 27. By "Minnekahda," London.

Littlejohn & Co., Inc.....	112
H. Muehlstein & Co., Inc.....	400
Chas. T. Wilson Co., Inc.....	275

MAY 28. By "Pres. Monroe," Far East.

H. A. Astlett & Co.....	1,387
Robert Badenhop Corp.....pkgs.	1,220
Baird Rubber & Trading Co., Inc.....	850
Baird Rubber & Trading Co., Inc.....	*150
Bierrie & Co., Inc.....	930
General Rubber Co.....	7,737
B. W. Henderson & Co., Inc.....	475
Hood Rubber Co.....	*240
Littlejohn & Co., Inc.....	4,087
The Meyer & Brown Corp.....	1,387
The Meyer & Brown Corp.....	*385
H. Muehlstein & Co., Inc.....	740
Poel & Kelly, Inc.....	500
Poel & Kelly, Inc.....	*100
Raw Products Co.....	350
Rogers Brown & Crocker Bros., Inc.....	3,575
Chas. T. Wilson Co., Inc.....	1,298

MAY 29. By "City of Wellington," Far East.

H. A. Astlett & Co.....	77
Paul Bertuch & Co., Inc.....	112
Bierrie & Co., Inc.....	112
General Rubber Co.....	777
B. W. Henderson & Co., Inc.....	70
Littlejohn & Co., Inc.....	758
The Meyer & Brown Corp.....	375
Poel & Kelly, Inc.....	128
Chas. T. Wilson Co., Inc.....	433

MAY 30. By "Birchbank," Far East.

Baird Rubber & Trading Co., Inc.....	206
Paul Bertuch & Co., Inc.....	56
General Rubber Co.....	256
Littlejohn & Co., Inc.....	722
The Meyer & Brown Corp.....	160
H. Muehlstein & Co., Inc.....	2,400
Poel & Kelly, Inc.....	100
Rogers Brown & Crocker Bros., Inc.....	1,870

JUNE 1. By "Laomedon," Far East.

	Cases
H. A. Astlett & Co.....	2,207
Robert Badenhop Corp.....pkgs.	945
Baird Rubber & Trading Co., Inc.....	1,700
Bierrie & Co., Inc.....	710
General Rubber Co.....	9,753
Haldane & Co., Inc.....	430
B. W. Henderson & Co., Inc.....	500
Hood Rubber Co.....	*245
Lavino American & Asiatic Co.....	100
Littiejohn & Co., Inc.....	6,385
The Meyer & Brown Corp.....	3,581
The Meyer & Brown Corp.....	*390
H. Muehlstein & Co., Inc.....	1,340
Poel & Kelly, Inc.....	286
Raw Products Co.....	150
Rogers Brown & Crocker Bros., Inc.....	2,102
Chas. T. Wilson Co., Inc.....	1,180

JUNE 2. By "Modjokerto," Far East.

H. A. Astlett & Co.....	†757
Robert Badenhop Corp.....pkgs.	†805
Haldane & Co., Inc.....	†240
Littlejohn & Co., Inc.....	†195
The Meyer & Brown Corp.....	†1,422
H. Muehlstein & Co., Inc.....	†1,500

JUNE 2. By "Pres. Jackson," Far East.

H. A. Astlett & Co.....	†555
Littlejohn & Co., Inc.....	†642
The Meyer & Brown Corp.....	†100
H. Muehlstein & Co., Inc.....	†890
Poel & Kelly, Inc.....	†500
Rogers Brown & Crocker Bros., Inc.....	†150

JUNE 3. By "Carmania," England.

General Rubber Co.....	85
Lavino American & Asiatic Co.....	120
Littlejohn & Co., Inc.....	80
The Meyer & Brown Corp.....	158

JUNE 3. By "Laconia," England.

The Meyer & Brown Corp.....	56

JUNE 3. By "Minnewaska," London.

H. A. Astlett & Co.....	349
H. Muehlstein & Co., Inc.....	280
Poel & Kelly, Inc.....	50
Rogers Brown & Crocker Bros., Inc.....	291

JUNE 3. By "Silverelm," Far East.

Robert Badenhop Corp.....pkgs.	†1,470
Littlejohn & Co., Inc.....	†730
The Meyer & Brown Corp.....	†1,174
H. Muehlstein & Co., Inc.....	1,831
Rogers Brown & Crocker Bros., Inc.....	†275

JUNE 3. By "Volendam," Holland.

General Rubber Co.....	60

JUNE 5. By "Samarinda," Far East.

H. A. Astlett & Co.....	1,669
Robert Badenhop Corp.....pkgs.	550
Baird Rubber & Trading Co., Inc.....	53
Paul Bertuch & Co., Inc.....	219
Bierrie & Co., Inc.....	671
General Rubber Co.....	6,793
Haldane & Co., Inc.....	254
Littlejohn & Co., Inc.....	1,203
The Meyer & Brown Corp.....	374
H. Muehlstein & Co., Inc.....	800
Poel & Kelly, Inc.....	821
Rogers Brown & Crocker Bros., Inc.....	1,170
Chas. T. Wilson Co., Inc.....	398

JUNE 8. By "Nortonian," England.

The Meyer & Brown Corp.....	*140

JUNE 8. By "Unicoe," Far East.

General Rubber Co.....	202

JUNE 9. By "Adriatic," Europe.

Littlejohn & Co., Inc.....	130

JUNE 9. By "Toledo," Far East.

H. A. Astlett & Co.....	3,224
Robert Badenhop Corp.....pkgs.	1,550
Baird Rubber & Trading Co., Inc.....	1,100
Baird Rubber & Trading Co., Inc.....	*300
Bierrie & Co., Inc.....	650
General Rubber Co.....	10,123
Haldane & Co., Inc.....	450
Lavino American & Asiatic Co.....	120
Littlejohn & Co., Inc.....	4,880
The Meyer & Brown Corp.....	1,923
Poel & Kelly, Inc.....	750
Raw Products Co.....	300
Rogers Brown & Crocker Bros., Inc.....	1,799
Chas. T. Wilson Co., Inc.....	1,076

JUNE 10. By "Naples Maru," Far East.

H. A. Astlett & Co.....	139
Littlejohn & Co., Inc.....	350

JUNE 10. By "Pres. Wilson," Far East.

H. A. Astlett & Co.....	2,363
Baird Rubber & Trading Co., Inc.....	603
Bierrie & Co., Inc.....	325
General Rubber Co.....	5,724
Haldane & Co., Inc.....	400
Hood Rubber Co.....	*150
Lavino American & Asiatic Co.....	200
Littlejohn & Co., Inc.....	2,984
Poel & Kelly, Inc.....	264
Raw Products Co.....	350
Rogers Brown & Crocker Bros., Inc.....	2,495
Chas. T. Wilson Co., Inc.....	772

	Cases
JUNE 10. By "Steel Scientist," Far East.	
H. A. Astlett & Co.	1,699
Robert Badenhop Corp.....pkgs.	440
Baird Rubber & Trading Co., Inc.	750
Baird Rubber & Trading Co., Inc.	*200
Paul Bertuch & Co., Inc.	200
Bierrie & Co., Inc.	100
General Rubber Co.	7,508
Haldane & Co., Inc.	340
Lavino American & Asiatic Co.	250
Littlejohn & Co., Inc.	2,961
The Meyer & Brown Corp.	400
The Meyer & Brown Corp.	*340
Poel & Kelly, Inc.	752
Raw Products Co.	30
Rogers Brown & Crocker Bros., Inc.	3,902
Chas. T. Wilson Co., Inc.	956
JUNE 11. By "Minnesota," London.	
Poel & Kelly, Inc.	308
Chas. T. Wilson Co., Inc.	286
JUNE 12. By "City of Worcester." Far East.	
Robert Badenhop. Corp.....pkgs.	265
Paul Bertuch & Co., Inc.	56
Bierrie & Co., Inc.	324
General Rubber Co.	320

* Arrived at Boston.
† Arrived at Los Angeles.

	Cases
Haldane & Co., Inc.	412
Littlejohn & Co., Inc.	1,415
Poel & Kelly, Inc.	100
Rogers Brown & Crocker Bros., Inc.	140
Chas. T. Wilson Co., Inc.	618
JUNE 13. By "Malayan Prince," Far East.	
H. A. Astlett & Co.	3,230
Robert Badenhop Corp.....pkgs.	1,132
Bierrie & Co., Inc.	1,039
General Rubber Co.	7,828
Haldane & Co., Inc.	655
B. W. Henderson & Co., Inc.	112
Littlejohn & Co., Inc.	3,851
The Meyer & Brown Corp.	1,490
Poel & Kelly, Inc.	260
Rogers Brown & Crocker Bros., Inc.	3,763
Chas. T. Wilson Co., Inc.	957

Africans

	Cases
MAY 21. By "Samaria," Europe.	
Littlejohn & Co., Inc.	17
MAY 27. By "Carinthia," Europe.	
Littlejohn & Co., Inc.	111
JUNE 3. By "Hamburg," Europe.	
Littlejohn & Co,. Inc.	220

Balata

	Cases
MAY 22. By "Trafalga," South America.	
Paul Bertuch & Co., Inc.	7
MAY 28. By "Boniface," South America.	
Paul Bertuch & Co., Inc.	23

Guayule

	Cases
MAY 18. By "El Mundo," Mexico.	
Continental Rubber Co. of N. Y.	560
MAY 24. By "El Alba," Mexico.	
Continental Rubber Co. of N. Y.	560
JUNE 10. By "El Dia," Mexico.	
Continental Rubber Co. of N. Y.	560

Rubber Latex

MAY 15. By "Silverbeech," Far East.	
General Rubber Co.....gals.	64,296
MAY 10. By "Steel Scientist," Far East.	
General Rubber Co.....gals.	65,528
Littlejohn & Co., Inc.....gals.	24

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
MAY 18. By "Biela," South America.					
H. A. Astlett & Co.	33	....	....	73	....
Paul Bertuch & Co., Inc.	125	....	120	....	....
General Rubber Co.	....	....	52	....	....
MAY 21. By "Sardinian Prince," South America.					
Paul Bertuch & Co., Inc.	35	....	8	....	....
MAY 22. By "Trafalga," South America.					
Paul Bertuch & Co., Inc.	450	....	48	77	....
MAY 28. By "Boniface," South America.					
H. A. Astlett & Co.	7	....	147	73	....
Paul Bertuch & Co., Inc.	7	....	....	....	...
General Rubber Co.	177	2	306	10	*1
Littlejohn & Co.	478	6	9	328	....
The Meyer & Brown Corp.	....	....	405	1,357	....
JUNE 8. By "Grange Park," South America.					
General Rubber Co.	....	....	34	....	....
JUNE 13. By "Francis," South America.					
General Rubber Co.	440	65	268	70	*8
Littlejohn & Co., Inc.	155	....	....	....	....
The Meyer & Brown Corp.	188	81	291	235	....

* Mixed.

United States Crude and Waste Rubber Imports for 1929 by Months

1929	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1929	Total 1928	Balata	Miscellaneous	Waste
January .....tons	51,202	1,055	30	5	....	13	52,305	46,243	67	799	181
February	63,851	530	60	97	....	...	64,538	29,445	80	1,220	319
March	51,661	2,112	15	36	....	...	53,824	40,894	85	825	70
April	53,256	844	8	4	59	...	54,171	37,240	87	1,606	609
May	47,940	1,078	54	49	59	...	49,180	32,883	88	1,013	230
Total five months, 1929.....tons	267,910	5,619	167	191	118	13	274,018	.....	407	5,463	1,409
Total five months, 1928.....tons	176,737	6,188	659	368	2,752	1	.....	186,705	605	4,361	1,548

Compiled from Rubber Manufacturers Association statistics.

Plantation Rubber Exports from Malaya*

	January 1 to March 31, 1929		
	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	1,277.00	2,817.00	2,254.00
British Possessions	1,111.00	117.00	72.00
Continent of Europe	7,246.00	2,081.00	1,925.00
United States	47,739.00	14,814.00	6,318.00
Japan	3,490.00	20.00	244.00
Other countries	274.00	50.00	..
Totals	61,137.00	19,899.00	10,813.00

*Excluding all foreign transhipments.

Crude Rubber Imports by Customs Districts

	*April, 1929		Four Months Ended *April, 1929	
	Pounds	Value	Pounds	Value
Massachusetts	3,985,752	$783,755	14,969,003	$2,696,761
New York	113,674,004	23,378,879	446,703,989	82,193,238
Philadelphia	217,490	40,591	1,683,095	283,199
Maryland	253,767	63,405	10,937,394	1,931,736
Los Angeles	3,822,685	753,584	21,054,997	3,787,019
San Francisco	131,499	24,783	598,320	129,462
Oregon	22,400	4,480	67,200	12,132
Chicago	17,148	3,430	17,148	3,430
Ohio	1,777,322	300,318	13,449,959	2,209,491
Colorado	929,600	191,626	1,702,400	329,350
Totals	124,834,667	$25,544,851	511,183,505	$93,575,818

*Including latex, dry rubber content.

British Malaya

RUBBER EXPORTS

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57, Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in May last totaled 43,960 tons, as compared with 49,816 tons in April last, and 26,403 tons in the corresponding period of 1928. The amount of rubber imported was 15,593 tons, of which 12,006 tons were declared as wet rubber. The following are comparative statistics:

	1928		1929	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	27,731	16,618	52,546	13,415
February	28,813	12,911	47,926	12,103
March	27,813	10,508	49,448	14,553
April	20,029	9,335	49,816	11,414
May	26,403	10,350	43,960	15,593
Totals	130,789	59,722	243,696	67,078

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of April and May:

	Apr., 1929 Tons	May, 1929 Tons
United Kingdom	6,921	5,477
United States	34,634	30,966
Continent of Europe	5,080	4,257
British Possessions	1,170	1,583
Japan	1,912	1,525
Other foreign countries	99	152
Totals	49,816	43,960

Westinghouse Lighting Institute Attracts U. S. Rubber Officials

Among the interested visitors at the Westinghouse Lighting Institute, the permanent exhibit conducted by the Westinghouse Lamp Co. on the seventh floor of the Grand Central Palace, New York, N. Y., in connection with the Golden Jubilee of Light, were officials from the United States Rubber Co., New York, N. Y. These included Eric Burkman, secretary, J. H. Wahlgren, mechanical goods sales department, and C. S. Ching, director of industrial and public relations. They were quite pleased when they discovered rubber hose made by their company as part of the equipment of a deep-sea diver shown at the Institute.

Their interest was caught by the display showing the smallest and largest electric-light lamps in existence. The latter is a very recent development necessitated by sound reproductions now used in the motion-picture industry. The lamps originally used gave forth a hissing sound which recorded exactly like the hiss of a human being and, consequently, ruined the picture.

Another interesting feature was found in the Automotive Room in which are shown all the various demonstrations of electrical systems used on automobiles and the application of all types of miniature lamps.

No one who is concerned with factories should neglect the Industrial Building. The lighting system in a plant often influences the efficiency of the workers, sometimes with most unprofitable results. A visit to this exhibit reveals the various methods of industrial lighting. Here is shown modern high-intensity illumination, also local lighting with special application to individual machines. One unique feature introduced here is an automatic control of illumination. This means that when daylight begins to fade and the light outside reaches that low degree of intensity which makes it difficult to continue work without artificial illumination, a photo-electric cell is affected and automatically operates the switches that turn on the lights.

The purpose of the Institute is to demonstrate what good lighting in all its phases really is. Here may be found the best types of lighting for a reception room, a public hall, a hospital, an art gallery, streets, stores, a loggia, offices and factories, an aviation field, a railroad, a theater, a schoolroom, a model home—indeed, for any place where light is used.

It was interesting to note that all through the exhibit rubber was met with, a small but important detail, in the guise of tape, insulated wire, reducing machines, automobile accessories, electric vibrators, and diving equipment.

Rubber Paint for Acid Tanks

A rubber material which can be applied as a paint or spray to the inner side of acid tanks is being introduced on the British market. It is known as "Cabtyrit," from "Cabtyre," well-known rubber compound for electrical insulation. While the solution form of "Cabtyrit" is recommended only for weak-acid liquor tanks, the material in the plastic condition molded into shape, and vulcanized, affords, it is said, a lining for metal containers that neither expands nor contracts over a wide range of temperature and will effectively resist the action of hot and cold hydrochloric acid and its solutions up to 110° C. When sheeted, the material is softened and easily worked into place as a lining at 25° C. Being a heavy compound, it is said that the material can be vulcanized in a simple manner and readily manipulated by average factory workers. Such lining also withstands the action of most organic acids, such as citric, tartaric, malic and formic acids, and also of phosphoric acid and cold sulphuric acid up to 80 per cent, and of hot vitriol at strengths not exceeding 60 per cent. It may also be used for weak solutions of nitric acid.

A Big Belting Order

Forty-eight thousand pounds of belting are being sent an American copper mining company in Tocopilla, Chile, by the Goodyear Tire & Rubber Co., Akron, O. This is the second large order to have been received from the Chile company, the total amount of which was 114,000 pounds.

The order for 48,000 pounds of belting was divided as to specifications as follows: one roll 445 feet long, 60-inch, 12-ply; one roll 446 feet long, stacker; one roll 602 feet long, 54-inch, 10-ply stacker; covers one-quarter inch top one-eighth pulley.

Tire Production Statistics

United States tire manufacturers produced a total of 7,883,805 pneumatic casings during April, 1929. Total production of inner tubes is estimated at 7,634,325, and total production of solid and cushion tires at 51,225 for the month.

Total shipments during April are estimated as follows: pneumatic casings, all classes, 7,294,370; inner tubes, 7,164,050; solid and cushion tires, 57,506.

Inventories as of April 30, 1929, are estimated as 16,931,740 for all pneumatic casings; 18,134,000 for inner tubes; and 183,484 for solid and cushion tires.

The tire industry is estimated to have consumed a total of 87,564,600 pounds of crude rubber, and 31,492,910 pounds of cotton fabric during April, in the manufacture of all types of pneumatic casings, inner tubes, and solid and cushion tires.

	High Pressure Pneumatic Casings					
	All Types			Cord		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	.....	58,457,863	55,721,937	.....	19,302,218	19,351,380
1929						
January	10,284,158	5,041,530	4,969,647	3,651,041	1,563,554	1,461,104
February	11,620,960	5,183,693	3,961,751	4,073,644	1,373,691	974,185
March	12,263,816	5,639,426	5,031,101	4,330,747	1,397,657	1,157,188
April	12,696,808	5,912,854	5,470,779	4,292,167	1,305,224	1,335,121

	Balloon Casings			Solid and Cushion Tires		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	.....	38,878,218	35,931,982	.....	508,223	512,602
1929						
January	6,583,958	3,470,596	3,499,121	149,240	31,583	33,051
February	7,472,592	3,796,660	2,976,698	145,811	29,747	31,463
March	7,858,642	4,229,586	3,863,650	141,902	35,441	40,205
April	8,346,727	4,601,986	4,123,769	137,613	38,419	43,130

	High Pressure Inner Tubes			Balloon Inner Tubes		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	.....	23,255,891	23,749,966	.....	36,878,990	34,095,223
1929						
January	4,734,477	1,540,272	1,800,676	6,805,018	3,347,660	3,630,579
February	5,159,171	1,398,156	1,046,042	7,572,752	3,675,116	2,908,406
March	5,356,289	1,475,822	1,276,490	7,938,587	4,120,493	3,773,585
April	5,220,167	1,347,128	1,447,504	8,369,244	4,375,920	3,921,768

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires	
	Cotton Fabric Pounds	Crude Rubber Pounds
1928	222,243,398	600,423,401
1929		
January	19,779,481	54,160,529
February	20,326,530	57,558,636
March	21,238,410	61,335,423
April	23,619,687	65,673,453

Rubber Manufacturers Association figures representing 75 per cent of the industry.

Low and High New York Spot Prices

PLANTATIONS	1929*	June 1928	June 1927
First latex crepe	$0.20¾ @ $0.22	$0.19 @ $0.20	$0.35½ @ $0.41
Smoked sheet, ribbed	.20 @ .21⅜	.19⅛ @ .19⅞	.34¾ @ .40½
PARAS			
Upriver, fine	.21¼ @ .23	.20 @ .23½	.30 @ .37
Upriver, coarse	.12½ @ .15	.14½ @ .16	.20 @ .25
Islands, fine	.20 @ ...	.18 @ .19	.26½ @ .31

* Figured to June 25, 1929.